STIC Search Report

EIC 3700

STIC Database Tracking Number: 213378

TO:	From:
James Swiger, III Location: RND 6c35 Art Unit: 3733 Case Serial Number: 10/708721	Jeanne Horrigan Location: RND 8A34 Phone: 571-272-3529 jeanne.horrigan@uspto.gov

Search Notes

Attached are the search results for the spinal fixation element and methods. I tagged the references that sounded most relevant to me, including those that had only part of what you wanted, such as a rod with a feature on it or a cannula with a slot in the sidewall. Regardless of the tagging, I recommend that you review all of the results, especially because I did not understand all of the abstracts.

Also attached are: a copy of your search request for your files and a search feedback form. Completing the form is voluntary. The completed forms help ensure that our services match your needs.

I hope the results are useful. Please feel free to contact me if you have any questions or want additional searching on this application.

STIC Search Results Feedback Form

EIC 3700

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

John Sims, EIC 3700 Team Leader
RND 8B35, Phone 2-3507

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 3730*
- *Relevant prior art* ***found****, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art* ***not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/EIC3700 RND 8B31

[File 350] **Derwent WPIX** 1963-2006/UD=200711

[File 347] **JAPIO** Dec 1976-2006/Oct(Updated 070201)


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Set     Items   Description
S1      26832   S SPINE OR SPINAL
S2     720569   S ROD OR RODS OR (FIXATION OR FUSION OR FIXING)(1N)(PIECE? ? OR DEVICE? ?
OR ELEMENT? ? OR MECHANISM? ?) OR FIXATOR? ?
S3    1038042   S BULBOUS OR BULG??? OR PROTRUD? OR PROTRUSION? ? OR SPHERICAL OR SQUARE
OR RECTANGULAR OR BULB? ? OR BULBLIKE
S4     223667   S (FEATURE? ? OR SHAPE???? OR FORM? ? OR CONFIGUR? OR ASPECT? ?)(5N)END?
?
S5    2374626   S CANNULA? ? OR LUMEN? ? OR ACCESS()(DEVICE? ? OR ELEMENT? ? OR
MECHANISM? ?) OR TUBE OR TUBES OR TUBELIKE OR TUBULAR OR CYLIND?? OR CYLINDRICAL?? OR
CONDUIT? ?
S6    3681734   S SLOT OR OPENING OR SLIT OR APERTURE OR HOLE OR PORT OR GAP
S7     928949   S ANCHOR? ? OR ANCHORING OR HOOK? ? OR BOLT? ? OR SCREW? ?
S8      13414   S PERCUTANEOUS? OR MINIMALLY()INVASIVE
S9     459063   S IC=A61?
S10     24789   S S2(10N)S3
S11      9572   S S2(10N)S4
S12    199239   S S5(5N)S6
S13       184   S S1 AND S10:S11
S14       330   S S1 AND S12
S15         8   S S13 AND S14
S16         7   S S7 AND S15
S17         1   S S15 NOT S16 [not relevant]
S18     23647   S S2(5N)S3:S4
S19        79   S S1(S)S18
S20         4   S S12 AND S19
S21         0   S S20 NOT S15
S22       487   S S1(S)S8
S23        15   S S10:S12 AND S22 AND S7
S24        15   S S23 NOT S15
S25        10   S S1/TI AND S8/TI AND S2 AND S5 AND S7
S26         8   S S25 NOT (S15 OR S23)
S27        25   S S1(S)S8 AND S2 AND S5 AND S7
S28        10   S S27 NOT (S15 OR S23 OR S25)
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16/5/2 (Item 2 from file: 350)
Derwent WPIX

0010482722 *Drawing available*
WPI Acc no: 2001-083093/200110
XRPX Acc No: N2001-063472
Connector for spiral osteo-synthesis rods has hook with seatings for rods and connecting bar
Patent Assignee: SPINEVISION SA (SPIN-N); VANACKER G (VANA-I); VANACKER G M (VANA-I)
Inventor: VANACKER G; VANACKER G M
Patent Family (11 patents, 93 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
FR 2795622	A1	20010105	FR 19998496	A	19990701	200110	B
WO 2001001872	A1	20010111	WO 2000FR1870	A	20000630	200110	E
AU 200059938	A	20010122	AU 200059938	A	20000630	200125	E
US 20020169448	A1	20021114	US 200219807	A	20020325	200277	E
			US 2002109275	A	20020327		

JP 2003503143	W	20030128	WO 2000FR1870	A	20000630	200309	E
			JP 2001507377	A	20000630		
EP 1278468	A1	20030129	EP 2000946047	A	20000630	200310	E
			WO 2000FR1870	A	20000630		
EP 1278468	B1	20051026	EP 2000946047	A	20000630	200571	E
			WO 2000FR1870	A	20000630		
DE 60023564	E	20051201	DE 60023564	A	20000630	200580	E
			EP 2000946047	A	20000630		
			WO 2000FR1870	A	20000630		
ES 2252025	T3	20060516	EP 2000946047	A	20000630	200634	E
DE 60023564	T2	20060727	DE 60023564	A	20000630	200649	E
			EP 2000946047	A	20000630		
			WO 2000FR1870	A	20000630		
US 7122036	B2	20061017	US 200119807	A	20011228	200668	NCE
			US 2002109275	A	20020327		

Priority Applications (no., kind, date): FR 19998496 A 19990701; US 2002109275 A 20020327

Alerting Abstract FR A1

NOVELTY - The connector for **spinal** osteo-synthesis **rods** has a **hook** to engage the ends of the rods. The **hook** has a semi-cylindrical seat (9) oriented along an axis (20) to receive a circular section **rod** (4). It has a second seat (11) with an axis perpendicular to the first and opening into the first seating to receive a traverse rod (2).

USE - For **spine** stabilisation in surgery

ADVANTAGE - Allows simple assembly with high rigidity

DESCRIPTION OF DRAWINGS - Drawing shows cross section of assembled connector

9 Semi-cylindrical seat

20 Axis

11 Second seat

16/5/3 (Item 3 from file: 350)

Derwent WPIX

0010356655 *Drawing available*

WPI Acc no: 2000-672290/200065

Related WPI Acc No: 1998-311242

XRPX Acc No: N2000-498418

Orthopaedic rod connecting assembly for spinal column implants has two elements connected together by shaft and compressible sleeve arrangement at ends of elements

Patent Assignee: SPINAL CONCEPTS INC (SPIN-N)

Inventor: ERRICO J P

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6139548	A	20001031	US 1995549977	A	19951030	200065	B
			US 199859108	A	19980413		

Priority Applications (no., kind, date): US 1995549977 A 19951030; US 199859108 A 19980413

Alerting Abstract US A

NOVELTY - The assembly has two elements (100,130) connected together by a shaft (114) and compressible sleeve arrangement at the ends of the elements. The other ends (102,132) of the elements receive a **spinal** rod during use. One or more of the inner surface of the sleeve and the outer surface of the shaft are textured to increase the friction between the inner surface of the sleeve and the shaft.

DESCRIPTION - INDEPENDENT CLAIMS are included for a method of manufacturing the rod, and a method of increasing the rigidity of the rod implant system, respectively.

USE - For **spinal** procedures.

ADVANTAGE - Enhanced rigidity.
DESCRIPTION OF DRAWINGS - The drawing shows a side perspective view of the assembled rod system.
102,132 **Spinal** rod receiving ends
100,130 Elements
114 Shaft

16/5/4 (Item 4 from file: 350)
Derwent WPIX

0009999703 *Drawing available*
WPI Acc no: 2000-303350/200026
XRPX Acc No: N2000-226699
Support and bone fixing assembly for the spinal column has a cylinder body with a compressible chamber and two hollow cylinders with a clamp to hold the pedicle screws in position with adjustment for the support
Patent Assignee: HESS M (HESS-I); SCHLAPFER F (SCHL-I); SYNTHES AG (SYNT-N); SYNTHES CHUR AG (SYNT-N); SYNTHES USA (SYNT-N)
Inventor: HESS M; SCHALPFER F; SCHL-PFER F; SCHLAEPFER F; SCHLAPFER F
Patent Family (18 patents, 29 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000018310	A1	20000406	WO 1998CH415	A	19980929	200026	B
AU 199891506	A	20000417	AU 199891506	A	19980929	200035	E
			WO 1998CH415	A	19980929		
ZA 199906207	A	20000628	ZA 19996207	A	19990929	200037	E
BR 199816034	A	20010529	BR 199816034	A	19980929	200134	E
			WO 1998CH415	A	19980929		
EP 1117336	A1	20010725	EP 1998943621	A	19980929	200143	E
			WO 1998CH415	A	19980929		
US 20010047173	A1	20011129	WO 1998CH415	A	19980929	200202	E
			US 2001820174	A	20010329		
AU 743783	B	20020207	AU 199891506	A	19980929	200224	E
			WO 1998CH415	A	19980929		
KR 2001106493	A	20011129	WO 1998CH415	A	19980929	200234	E
			KR 2001703947	A	20010328		
MX 2001002407	A1	20010601	MX 20012407	A	20010307	200235	NCE
JP 2002525158	W	20020813	WO 1998CH415	A	19980929	200267	E
			JP 2000571833	A	19980929		
NZ 509937	A	20021220	NZ 509937	A	19980929	200309	E
			WO 1998CH415	A	19980929		
US 6582436	B2	20030624	WO 1998CH415	A	19980929	200343	E
			US 2001820174	A	20010329		
TW 555543	A	20031001	TW 1999115154	A	19990901	200423	E
EP 1117336	B1	20040519	EP 1998943621	A	19980929	200433	E
			WO 1998CH415	A	19980929		
DE 59811438	G	20040624	DE 59811438	A	19980929	200442	E
			EP 1998943621	A	19980929		
			WO 1998CH415	A	19980929		
ES 2221195	T3	20041216	EP 1998943621	A	19980929	200510	NCE
MX 225866	B	20050127	WO 1998CH415	A	19980929	200566	E
			MX 20012407	A	20010307		
KR 539402	B	20051228	WO 1998CH415	A	19980929	200680	E
			KR 2001703947	A	20010328		

Priority Applications (no., kind, date): WO 1998CH415 A 19980929; MX 20012407 A 20010307
Alerting Abstract WO A1
NOVELTY - The support and bone **fixing assembly** has a cylindrical body (3) with a compressible chamber (34), which is open at the bottom to take the **spherical head of the bone fixing unit** (2). A threading is coaxial round the center axis (33) to hold a clamp (4), while a drilling (36) is across the center axis (33). A lower hollow cylinder (5) can slide over the under section (72) and compress the chamber (34). An upper **cylinder** (6) has a passage **opening** (61) open to the bottom, which matches the lateral drilling (36). A unit (85) forms a third contact point between the cylinders (5,6), in addition to the two contact points formed between the inserted longitudinal carrier (1) and the passage opening (61).
USE - The system is for the fixing of the bones in the **spinal** column with a longitudinal carrier.
ADVANTAGE - The structure ensures that the pedicle **screws** are held firmly in position, with effective adjustment of the linear support.
DESCRIPTION OF DRAWINGS - The drawing shows a longitudinal section through the support and bone fixing assembly.
1 linear support
2 bone fixing unit
3 cylinder body
4 clamp
5,6 hollow cylinders
33 center axis
34 compressible chamber
36 lateral drilling
61 passage opening
72 under section
85 third contact point unit

16/5/5 (Item 5 from file: 350)
Derwent WPIX

0007908934 *Drawing available*
WPI Acc no: 1996-442850/199644
Spinal fixation device for stabilising vertebrae - cuts channel into vertebrae into which joining rod is inserted and secured to screws by locking cap
Patent Assignee: KUSLICH S D (KUSL-I); SPINEOLOGY INC (SPIN-N)
Inventor: KUSLICH S D
Patent Family (19 patents, 27 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1996028118	A1	19960919	WO 1996US2629	A	19960227	199644	B
AU 199649972	A	19961002	AU 199649972	A	19960227	199703	E
US 5591235	A	19970107	US 1995404236	A	19950315	199708	E
EP 814732	A1	19980107	EP 1996906647	A	19960227	199806	E
			WO 1996US2629	A	19960227		
AU 689713	B	19980402	AU 199649972	A	19960227	199823	E
NZ 303609	A	19980924	NZ 303609	A	19960227	199845	E
			WO 1996US2629	A	19960227		
HU 199801325	A2	19980928	WO 1996US2629	A	19960227	199846	E
			HU 19981325	A	19960227		
MX 199707030	A1	19971101	MX 19977030	A	19970912	199902	E
JP 11502437	W	19990302	JP 1996527637	A	19960227	199919	E
			WO 1996US2629	A	19960227		
KR 1998703020	A	19980905	WO 1996US2629	A	19960227	199938	E
			KR 1997706428	A	19970912		

KR 230605	B1	19991115	WO 1996US2629	A	19960227	200111	E
			KR 1997706428	A	19970912		
HU 219422	B	20010428	WO 1996US2629	A	19960227	200131	E
			HU 19981325	A	19960227		
CA 2214509	C	20010724	CA 2214509	A	19960227	200147	E
			WO 1996US2629	A	19960227		
US RE37479	E	20011218	US 1995404236	A	19950315	200206	E
			US 1999227163	A	19990107		
MX 202674	B	20010627	MX 19977030	A	19970912	200235	E

JP 3303976	B2	20020722	JP 1996527637	A	19960227	200254	E
			WO 1996US2629	A	19960227		
EP 814732	B1	20021211	EP 1996906647	A	19960227	200282	E
			WO 1996US2629	A	19960227		
DE 69625339	E	20030123	DE 69625339	A	19960227	200315	E
			EP 1996906647	A	19960227		
			WO 1996US2629	A	19960227		
ES 2191089	T3	20030901	EP 1996906647	A	19960227	200365	E

Priority Applications (no., kind, date): US 1999227163 A 19990107; WO 1996US2629 A 19960227; US 1995404236 A 19950315

Alerting Abstract WO A1

The surgically implantable system comprises a **rod** adapted to extend within vertebrae of a **spinal** section in need of correction and at least two substantially hollow cylindrical members each having a series of bone-engaging threads on the exterior surface of the cylindrical members. Each of the cylindrical members includes an upper and a lower rim. **Each of the upper rims includes a pair opposing rod fixation slots to receive the rod** transversely across the rim and to be below the plane of the rim. There is a locking cap securable to each of the cylindrical members at the upper rims to thereby lock the **rod** to each the cylindrical member.

ADVANTAGE - Provides linkage which is significantly greater in terms of mechanical stability than previously known.

16/5/6 (Item 6 from file: 350)

Derwent WPIX

0006622981 *Drawing available*

WPI Acc no: 1993-387962/199349

XRPX Acc No: N1993-299607

Osteo-synthetic fixing element for spinal surgery - fitted to bone at lower end with longitudinal carrier clamped in upper end by threaded retaining element with clamping ball

Patent Assignee: SCHLAPFER J F (SCHL-I); SYNTHES AG (SYNT-N); SYNTHES USA (SYNT-N)

Inventor: FLUCKIGER M; FLUECKIGER M; SCHLAEPFER J F; SCHLAPFER J F

Patent Family (7 patents, 8 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
EP 572790	A1	19931208	EP 1993106520	A	19930422	199349	B
CA 2097623	A	19931205	CA 2097623	A	19930603	199409	E
EP 572790	B1	19960214	EP 1993106520	A	19930422	199611	E
DE 59301618	G	19960328	DE 59301618	A	19930422	199618	E
			EP 1993106520	A	19930422		
US 5520689	A	19960528	US 199370941	A	19930604	199627	E
			US 1995400482	A	19950308		
ES 2085673	T3	19960601	EP 1993106520	A	19930422	199629	E
CA 2097623	C	20021112	CA 2097623	A	19930603	200302	E

Priority Applications (no., kind, date): CH 19921799 A 19920604
Alerting Abstract EP A1
The **fixing element** has a lower section (2) anchored a bone and an upper section (3) projecting in the direction of the longitudinal axis (1) of the fixing element, with an open transverse **slot** (4) receiving a longitudinal carrier (5). This lies at the base of a cylindrical blind bone (6) in the upper section (3), which is threaded for receiving a threaded circular retaining element (7).
The bottom end of the retaining element has a hollow recess (9) receiving a ball (10) which partly projects from the recess to contract the longitudinal carrier.
ADVANTAGE - Prevents irreversible locking of fixing element components due to exerted forces.

24/5/5 (Item 5 from file: 350)
Derwent WPIX

0015279895 *Drawing available*
WPI Acc no: 2005-630025/200564
XRPX Acc No: N2005-517468
Flexible rod device for treatment of e.g. scoliosis, has U-shaped flexible center bridge with ends terminating in feet having slots for receiving fasteners
Patent Assignee: LOEB M P (LOEB-I)
Inventor: LOEB M P
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050209694	A1	20050922	US 2004552619	P	20040312	200564	B
			US 200576148	A	20050309		

Priority Applications (no., kind, date): US 2004552619 P 20040312; US 200576148 A 20050309
Alerting Abstract US A1
NOVELTY - The **flexible rod device (10) has rod having U-shaped flexible center bridge (14) with ends terminating in feet** (12). Each foot has **slot** (13) for receiving fastener which attaches foot to vertebra whose facets are non-functional. The **rod** is made of rigid material selected from a group consisting of medical grade stainless steel, titanium, tantalum, carbon fibers in a matrix of rigid, durable plastic.
DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for inserting and attaching an artificial **spinal** joint to vertebra.
USE - For treatment of e.g. scoliosis, spondylolisthesis, painful spinal joints, and degenerated spinal discs.
ADVANTAGE - Prevents subluxation and retains the mobility of the spine by providing for angular deflection of one vertebra with respect to another. Enables delivery of the flexible rod device in a minimally or moderately invasive procedure.
DESCRIPTION OF DRAWINGS - The figure shows the perspective view of the positioning and delivery components
10 Flexible rod device
12 Feet
13 Slot
14 U-shaped flexible center bridge
16 Pin

24/5/6 (Item 6 from file: 350)
Derwent WPIX

0015221017 *Drawing available*

WPI Acc no: 2005-571055/200558
Related WPI Acc No: 2006-240623; 2006-363257; 2006-461094; 2006-538417
XRPX Acc No: N2005-468369
Tool set for implanting rod in human spine, has each of channels of pair of guide tools, is sized and shaped to receive opposite ends of spinal rod for operably guiding rod ends towards respective bone screws
Patent Assignee: JACKSON R P (JACK-I)
Inventor: JACKSON R P
Patent Family (4 patents, 107 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050192570	A1	20050901	US 2004789149	A	20040227	200558	B
WO 2005092218	A1	20051006	WO 2004US31860	A	20040929	200566	E
EP 1720468	A1	20061115	EP 2004789190	A	20040929	200675	E
			WO 2004US31860	A	20040929		
US 7160300	B2	20070109	US 2004789149	A	20040227	200705	E

Priority Applications (no., kind, date): US 2004789149 A 20040227
Alerting Abstract US A1
NOVELTY - Each of pair of end guide tool has lower end attached to respective **spinal** implant bone **screw**. Each of guide tools has a longitudinal guide channel extending upwardly from lower end. Each of channels is sized and **shaped** to receive opposite **ends** of the **rod** for operably guiding the **rod** ends towards respective bone **screws**.
DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
vertebral support rod implantation kit;
bone **screw** and rod seating assembly;
percutaneously implanting method of rod along human **spine**;
percutaneously inserting method of **spinal** rod into pair of end bone **screws**; and
guide tool for implanting **spinal** rod in bone **screw**.
USE - For implanting **spinal** rod in patient with minimal surgical invasion of patient.
ADVANTAGE - The guide tools is easily and quickly secured to mating structure of respective bone **screw** head and is easily removed from the bone **screw** by manual rotation of the handle of the tools exterior of the patient. Minimizes surgical invasion of patient.
DESCRIPTION OF DRAWINGS - The figure shows a front elevational view of the intermediate guide tool of tool set.
10 intermediate guide tool
93,94 legs
99 front opening
101 lower opening

24/5/8 (Item 8 from file: 350)
Derwent WPIX

0015056584 *Drawing available*
WPI Acc no: 2005-404613/200541
XRPX Acc No: N2005-328329
Introduction of spinal fixation element into spinal column involves positioning spinal fixation element through sidewall opening of two percutaneous access devices in the direction transverse to longitudinal axis of access devices
Patent Assignee: ANDERSON D G (ANDE-I); ROSS G J (ROSS-I)
Inventor: ANDERSON D G; ROSS G J
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050131422	A1	20050616	US 2003737537	A	20031216	200541	B

Priority Applications (no., kind, date): US 2003737537 A 20031216
Alerting Abstract US A1
NOVELTY - The method involves positioning a **spinal fixation element** (70) through the **sidewall opening of at least two percutaneous access devices** in the direction transverse to the longitudinal axis of the **percutaneous** access device. The fixation element advances and seats in a receiver head (52) of at least two **spinal anchors** (50).
DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
Percutaneous access system; and
Percutaneous access device.
USE - For introducing spinal fixation element into spinal column during spinal **surgery**.
ADVANTAGE - Reduce the amount of trauma caused to the patient while minimizing damage to the muscle surrounding the surgical site.
DESCRIPTION OF DRAWINGS - The figure is the perspective view of the compression tool positioned around the percutaneous access device.
50 **Spinal anchors**
52 **Receiver head**
70 **Spinal fixation element**
102,104 Arms

24/5/10 (Item 10 from file: 350)
Derwent WPIX

0014925752 *Drawing available*
WPI Acc no: 2005-273458/200528
Related WPI Acc No: 2005-253322
XRAM Acc no: C2005-085670
XRPX Acc No: N2005-224601
Surgical access device for spinal surgery, includes distal portion, and passage having prosthetic spinal disc implant inserted to interbody space
Patent Assignee: DIPOTO G (DIPO-I); ENDIUS INC (ENDI-N)
Inventor: ANDERSON S; BAKER D; DIPOTO G; ROSSIN V; SHLUZAS A
Patent Family (5 patents, 107 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2005032358	A2	20050414	WO 2004US33088	A	20041004	200528	B
US 20050090822	A1	20050428	US 2003693815	A	20031024	200530	E
US 20050090833	A1	20050428	US 2003693663	A	20031024	200530	E
US 20050090899	A1	20050428	US 2003693250	A	20031024	200530	E
EP 1691668	A2	20060823	EP 2004794435	A	20041004	200655	E
			WO 2004US33088	A	20041004		

Priority Applications (no., kind, date): US 2003693815 A 20031024; US 2003693663 A 20031024; US 2003693250 A 20031024; US 2003508784 P 20031002; US 2004842651 A 20040510
Alerting Abstract WO A2
NOVELTY - A surgical **access device** has a **passage** and a distal portion. It is actuatable between a first configuration where the passage has a first cross-sectional area at the distal portion for insertion into the patient and a second configuration where the passage has an enlarged cross-sectional area at the distal portion. It can provide access to an interbody space. The passage has a prosthetic spinal disc implant inserted to the interbody **space**.
DESCRIPTION - INDEPENDENT CLAIMS are also included for:
a system for performing a minimally invasive spinal disc **replacement** on a patient, comprising the inventive surgical **access device** (4504), and an instrument capable of **advancing the prosthetic spinal disc implant (4500) through the passage**;
a system for stabilizing at least two adjacent vertebrae of the spine of a patient, comprising the inventive **access device**, and a motion preserving, stabilization device for insertion through the passage and attachment between the at least two adjacent vertebrae;

a system for fixing at least two adjacent vertebrae of the **spine** of a patient, comprising the **access device**, and a first **fastener** for transfacet fixation and for insertion through the **passage**;
replacing an intervertebral disc in an interbody space of a spine of a patient, comprising inserting an **access device** through an incision in a skin of the patient, expanding the access device from a first configuration to a second configuration, and delivering a prosthetic spinal disc implant through the access device; and
a system for replacing a portion of a disc having a nucleus and an annulus, comprising the inventive access device, an annulotomy tool for forming an aperture (4536) in the annulus through the access device, and a disc evacuation tool for removing a portion of the nucleus through the access device.
USE - For use in spinal surgery (claimed).
ADVANTAGE - The inventive surgical access device can reduce the trauma of spine surgery by reducing the size of the incision and the degree **of** muscle stripping to access the vertebrae.
DESCRIPTION OF DRAWINGS - The figure is a schematic view illustrating a method of inserting a spinal implant into an interbody space through an access device.
4532 Viewing element
4500 Prosthetic spinal disc implant
4504 Surgical access device
4536 Aperture
4580 Gripping apparatus

24/5/11 (Item 11 from file: 350)
Derwent WPIX

0014925077 *Drawing available*
WPI Acc no: 2005-272782/200528
Related WPI Acc No: 2003-440593; 2003-556815; 2005-065269; 2005-657660
XRPX Acc No: N2005-224146
Minimally invasive surgery for treating spinal disorder, involves coupling fixation element to first and second anchors after advancing first end of fixation element subcutaneously through opening in first port and second port
Patent Assignee: BEARDSLEY T A (BEAR-I); BIRELEY D S (BIRE-I); SIMONSON R E (SIMO-I)
Inventor: BEARDSLEY T A; BIRELEY D S; SIMONSON R E
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050080418	A1	20050414	US 200121809	A	20011030	200528	B
			US 200124221	A	20011030		
			US 2004914983	A	20040810		

Priority Applications (no., kind, date): US 200124221 A 20011030; US 200121809 A 20011030; US 2004914983 A 20040810
Alerting Abstract US A1
NOVELTY - A **fixation element** is coupled to a first **anchor** and a second **anchor** after advancing the first end of the **fixation element subcutaneously** through an opening in a first port (310) and a second port (410) to the second **anchor**.
USE - For treating spinal disorder.
ADVANTAGE - Ensures secure interconnection between **screw** and **fixation rod**.
DESCRIPTION OF DRAWINGS - The figure shows the side sectional view of ports.
310 First port
410 Second port
502,602 Proximal handle
504,604 Shaft

24/5/12 (Item 12 from file: 350)
Derwent WPIX

0014345735 *Drawing available*
WPI Acc no: 2004-533947/200451
Related WPI Acc No: 2002-537147; 2003-342470
XRAM Acc no: C2004-196330
XRPX Acc No: N2004-422921

Formed-in-place orthopedic device for forming a spinal stabilization rod in situ, has outer wall and hardenable medium comprising resin and hardener mixture that is cured at specified temperature and time

Patent Assignee: VERTELINK CORP (VERT-N); SDGI HOLDING CO LTD (SDGI-N)
Inventor: ESTES R H; NGUYEN T V; PHAM T V; SHAOLIAN S M; TEITELBAUM G P ; VAN NGUYEN T
Patent Family (7 patents, 106 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2004058045	A2	20040715	WO 2003US39952	A	20031216	200451	B
AU 2003299633	A1	20040722	AU 2003299633	A	20031216	200476	E
US 6875212	B2	20050405	US 2000213385	P	20000623	200523	E
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2001747066	A	20011221		
			US 2002161554	A	20020531		
			US 2002327706	A	20021220		
EP 1589886	A2	20051102	EP 2003799917	A	20031216	200573	E
			WO 2003US39952	A	20031216		
JP 2006510449	W	20060330	WO 2003US39952	A	20031216	200623	E
			JP 2004563576	A	20031216		
KR 2005088319	A	20050905	WO 2003US39952	A	20031216	200648	E
			KR 2005711682	A	20050620		
CN 1787785	A	20060614	CN 200380109700	A	20031216	200674	E

Priority Applications (no., kind, date): US 2000213385 P 20000623; US 2001943636 A 20010829; US 2001976459 A 20011010; US 2001747066 A 20011221; US 2002161554 A 20020531; US 2002327706 A 20021220

Alerting Abstract WO A2

NOVELTY - A formed-in-place orthopedic device comprises an outer wall defining a cavity; and hardenable medium within the cavity to form the orthopedic device. The hardenable medium comprises a resin and hardener mixture that is cured at below 45(deg)C for <= 90 minutes. It is hardened while the device is positioned within the body of a patient to create the formed-in-place orthopedic device.

DESCRIPTION - INDEPENDENT CLAIMS are also included for:

a **bone fixation device**, comprising a delivery catheter having an inflatable balloon (114); the hardenable medium contained within the inflatable balloon and an epoxy that cures to a hardened form having a static compression bending value (ASTM F1 717) of >= 90 lbs in <= 90 minutes; and at least two **anchors** having portals, where the inflatable balloon extends through the portals of the two **anchors**;

an **orthopedic fixation device**, comprising an elongate, flexible tubular body (104) having a distal end (108) and a proximal end (106), and forming a central lumen; **a manifold (124) at the proximal end of the tubular body comprising port(s)**; an inflatable balloon having a proximal end (116), a distal end (118) and an interior, and removably attached to the distal end of the tubular body; the hardenable medium for inflating the inflatable balloon, and comprising 45-52 wt.% aromatic diepoxide resin, 19-23 wt.% aliphatic diepoxide resin, 20-29 wt.% dialkylamines and 4-9 wt.% cycloalkylamines; and a valve provided at the proximal end of the inflatable balloon;

a method of forming an orthopedic device (102) at a treatment site within the body of a patient, comprising positioning an outer wall at the treatment site within the patient, where the outer wall defines a chamber; and introducing the hardenable medium into the

chamber, where the hardenable medium cures from a liquid form to a hardened form having a static compression bending value of >= 90 lbs (ASTM F1717) in <= 90 minutes; and a method of stabilizing an orthopedic fracture, comprising inserting at least two **anchors** having portals into a bone; delivering an orthopedic device comprising an inflatable balloon to the bone; and inflating the balloon with the hardenable medium, where the orthopedic device extends through the portals, such that the inflating fixes the **anchors** in relation to one another.
USE - Forming a spinal stabilization rod in situ, or for fixation of a spine or other bone or bones.
ADVANTAGE - The device repositions and fixes displaced vertebrae or portions of displaced vertebrae that cause less pain and potential complications. It is implantable through a **minimally invasive** procedure. It provides the ability to obtain access to the treatment site through a **minimally invasive** access pathway, while enabling the formation of a relatively larger implant at the treatment site. This allows procedure morbidity to be minimized, since open surgical cut-downs or other invasive access procedures may be avoided. In addition, in situ formation allows the formation of the implant having any of a wide variety of customized or predetermined shapes, due to the ability of the infusible hardenable medium to assume the shape of the cavity of a flexible container into which it is infused.
DESCRIPTION OF DRAWINGS - The figure is a side elevational view of a delivery catheter having an inflatable fixation device.
102 Orthopedic device
104 Elongate, flexible tubular body
106 Proximal end of the tubular body
108 Distal end of the tubular body
114 Inflatable balloon
116 Proximal end of the balloon
118 Distal end of the balloon
124 Manifold

24/5/13 (Item 13 from file: 350)
Derwent WPIX

0013874938 *Drawing available*
WPI Acc no: 2004-053697/200405
XRPX Acc No: N2004-043318
Spinal stabilization device, has cage with distal end for insertion into spinal disc passageway, and set of anchors on exterior part of cage for stabilizing cage in spinal disc passageway
Patent Assignee: LOEB M P (LOEB-I); RICHLEY R (RICH-I); TRIMEDYNE INC (TRIM-N)
Inventor: LOEB M P; RICHLEY R; RICHLEY R R
Patent Family (4 patents, 100 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2003105673	A2	20031224	WO 2003US19150	A	20030617	200405	B
AU 2003248714	A1	20031231	AU 2003248714	A	20030617	200451	E
US 20050222681	A1	20051006	US 2002389365	P	20020617	200566	E
			WO 2003US19150	A	20030617		
			US 2004518423	A	20041217		
AU 2003248714	A8	20051027	AU 2003248714	A	20030617	200624	E

Priority Applications (no., kind, date): US 2004518423 A 20041217; US 2002389365 P 20020617
Alerting Abstract WO A2
NOVELTY - The device (100) has a cage with a distal end for insertion into a spinal disc (113) passageway formed in a spinal disc and an open proximal end to receive a shaft of an insertion device. A set of **anchors** on the exterior of the cage stabilizes the cage in

the spinal disc passageway. The cage is made of helical metal coil having exterior edges beveled into a sharp point.
DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of treating a degenerated disc.
USE - Used for treating degenerated spinal disc.
ADVANTAGE - The device treats a degenerated lumbar, thoracic or cervical disc in a **minimally invasive**, outpatient procedure, reducing the risks, mobility and cost of traditional surgical procedures and reducing the failure rate. The device provides more normal **spinal** movement for the patient without immobilizing the **spine** and reduces the need for subsequent surgeries.
DESCRIPTION OF DRAWINGS - The drawing shows a cross sectional, side view of a **spinal** stabilization device inserted into a **spinal** disc.
100 **Spinal** stabilization device
111 Delivery cannula
112 Tunnel
113 **Spinal** disc
114 Vertebra

24/5/14 (Item 14 from file: 350)
Derwent WPIX

0012686460 *Drawing available*
WPI Acc no: 2002-537147/200257
Related WPI Acc No: 2003-342470; 2004-533947
XRPX Acc No: N2002-425427
Percutaneous vertebral fusion repositioning and fixing uses a bone screw, where each screw has a portal and a balloon is inflated between the portals
Patent Assignee: DABNEY J H (DABN-I); ESTES R H (ESTE-I); NGUYEN T V (NGUY-I); PHAM T V (PHAM-I); SDGI HOLDINGS INC (SDGI-N); SHAOLIAN S M (SHAO-I); TEITELBAUM G P (TEIT-I); UNIV SOUTHERN CALIFORNIA (UYSC-N); VAN NGUYEN T (VNGU-I)
Inventor: DABNEY H; DABNEY J H; ESTES R H; NGUYEN T V; PHAM T V; SHAOLIAN S M; TEITELBAUM G P; VAN NGUYEN T
Patent Family (19 patents, 93 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2002000126	A1	20020103	WO 2000US34855	A	20001221	200257	B
AU 200125881	A	20020108	AU 200125881	A	20001221	200257	E
US 20020068975	A1	20020606	US 2000213385	P	20000623	200257	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
US 20020082598	A1	20020627	US 2000213385	P	20000623	200257	E
			US 2000747066	A	20001221		
US 20020082600	A1	20020627	US 2000213385	P	20000623	200257	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
US 20020198526	A1	20021226	US 2000213385	P	20000623	200304	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2002161554	A	20020531		
EP 1292239	A1	20030319	EP 2000989371	A	20001221	200322	E
			WO 2000US34855	A	20001221		
US 20040006341	A1	20040108	US 2000213385	P	20000623	200404	E
			US 2000747066	A	20001221		

			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2002161554	A	20020531		
			US 2002327706	A	20021220		
JP 2004500955	W	20040115	WO 2000US34855	A	20001221	200410	E
			JP 2002504912	A	20001221		
US 20040082954	A1	20040429	US 2000213385	P	20000623	200429	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2003689199	A	20031020		
US 20040082961	A1	20040429	US 2000213385	P	20000623	200429	E
			US 2000747066	A	20001221		
			US 2003688135	A	20031017		
US 20040087950	A1	20040506	US 2000213385	P	20000623	200430	E
			US 2000747066	A	20001221		
			US 2003688646	A	20031017		
US 20040215193	A1	20041028	US 2000213385	P	20000623	200471	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2004854097	A	20040526		
US 6821277	B2	20041123	US 2000213385	P	20000623	200478	E
			US 2000747066	A	20001221		
US 20050149022	A1	20050707	US 2000213385	P	20000623	200547	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2002161554	A	20020531		
			US 2002327706	A	20021220		
			US 200556971	A	20050211		
US 20050234453	A1	20051020	US 2000213385	P	20000623	200569	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2002161554	A	20020531		
			US 2005151785	A	20050614		
US 20050251140	A1	20051110	US 2000213385	P	20000623	200574	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2002161554	A	20020531		
			US 2005151972	A	20050614		
US 6964667	B2	20051115	US 2000213385	P	20000623	200575	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
			US 2002161554	A	20020531		
US 7008424	B2	20060307	US 2000213385	P	20000623	200618	E
			US 2000747066	A	20001221		
			US 2003688646	A	20031017		

Priority Applications (no., kind, date): US 2005151972 A 20050614; US 2005151785 A 20050614; US 200556971 A 20050211; US 2004854097 A 20040526; US 2003689199 A 20031020; US 2003688646 A 20031017; US 2003688135 A 20031017; US 2002327706 A 20021220; US 2002161554

A 20020531; US 2001976459 A 20011010; US 2001943636 A 20010829; US 2000747066 A 20001221; US 2000213385 P 20000623
Alerting Abstract WO A1
NOVELTY - Bone **screw** (10) comprises: a proximal portion (12) with head having a proximal end (14) and portal (22); a distal portion (16) with threads and a tip with a distal end (18); and a central lumen to receive a guide wire extending coaxially completely through the bone **screw** from proximal to distal ends.
DESCRIPTION - INDEPENDENT CLAIMS are also included for:
a screwdriver;
an inflatable **connection rod**;
a directing sheath;
a method of repositioning or fixing one or more unstable, separated or displaced vertebrae in a patients vertebral column; and
a kit for repositioning or fixing a vertebrae that is unstable, separated or displaced.
USE - For remedying bone damage.
DESCRIPTION OF DRAWINGS - The drawing shows a perspective view of the bone screw.
10 bone **screw**
12 proximal portion
14 proximal end
16 distal portion
18 distal end
22 portal

24/5/15 (Item 15 from file: 350)
Derwent WPIX

0012255533 *Drawing available*
WPI Acc no: 2002-195588/200225
XRAM Acc no: C2002-060383
XRPX Acc No: N2002-148629
Compression device for treating bulging, herniated or compressed intervertebral disc, comprises rod, toggle pivotally connected with rod and disc restrainer which is attached to one end of the rod
Patent Assignee: YEUNG J E (YEUN-I)
Inventor: YEUNG J E
Patent Family (5 patents, 93 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2001095818	A1	20011220	WO 2000US24921	A	20000912	200225	B
AU 200073709	A	20011224	AU 200073709	A	20000912	200227	E
EP 1299041	A1	20030409	EP 2000961808	A	20000912	200325	E
			WO 2000US24921	A	20000912		
EP 1299041	B1	20061004	EP 2000961808	A	20000912	200668	E
			WO 2000US24921	A	20000912		
DE 60031175	E	20061116	DE 60031175	A	20000912	200679	E
			EP 2000961808	A	20000912		
			WO 2000US24921	A	20000912		

Priority Applications (no., kind, date): US 2000211125 P 20000612
Alerting Abstract WO A1
NOVELTY - A compression device (118) for treating a **bulging** , herniated or compressed intervertebral disc (100), comprises a **rod , a toggle pivotally connected with the rod** and a disc restraining member which is attached to one end of the rod. The toggle has a delivery position and a deployed position.
DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
Method for treating bulging, herniated or compressed intervertebral disc;
A tissue fastening device (144);

Method of fastening tissue using the tissue fastening device;
A drain tube to treat an intervertebral disc for a bulge or herniation; and
Method of draining nucleus pulposus from an intervertebral disc
USE - For treating a dysfunctional intervertebral disc, such as a bulging, herniated or compressed discs and torn tissues, for draining nucleus pulposus to ease low back pain and fastening torn tissues, such as tendons, ligaments, menisci, organs, skin and/or other structures or devices.
ADVANTAGE - The compression device fortifies and supports the side wall of the annulus from rolling, thereby minimizing vertebral instability. The disc restrainer compress and conform to the contour of a normally shaped annulus with minimal protrusion. The compression device fasten, restrict, tighten, support, fortify, maintain and/or pinch in the annulus of a bulging or flattened disc to alleviate nerve impingement and minimize intervertebral instability and spinal stenosis. The advantageous of tissue fastening device are minimal possibility of rupturing major blood vessels since it does not penetrate through the anterior side of the dysfunctional disc, dissection of anterior and posterior longitudinal ligaments is not necessary and no part protrudes to impinge nerve, spinal cord or blood vessels. The intervertebral disc fastening provides advantageous such as alleviating nerve impingement, minimizing spinal stenosis and/or stabilizing intervertebral disc. The advantageous of tissue fasteners are resilient tissue fastening, minimal fastener migration, **minimally invasive**, accessible to deep body targets, suture-free fastening, attachable to bone, minimal surgical space, permanent or degradable fastening, simple to use and capable manipulating tissue.
DESCRIPTION OF DRAWINGS - The figure shows deployment of the tissue fastener by withdrawing the fastener deployment tube while the disc compressor presses down on the bulge and the plunger remains stationary.
100 Bulging disc
118 Compression device
144 Tissue fastener

26/5/2 (Item 2 from file: 350)
Derwent WPIX

0015913435
WPI Acc no: 2006-445076/200645
Related WPI Acc No: 2004-070960; 2006-145329
XRPX Acc No: N2006-364822
Providing percutaneous access to facilitate insertion of orthopedic spinal stabilization implant involves inserting elongated tubular structure having small cross-section and expanding to greater cross-sectional profile
Patent Assignee: NGUYEN T V (NGUY-I); PHAM T V (PHAM-I); SHAOLIAN S M (SHAO-I); TEITELBAUM G P (TEIT-I)
Inventor: NGUYEN T V; PHAM T V; SHAOLIAN S M; TEITELBAUM G P
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20060142795	A1	20060629	US 2002188732	A	20020702	200645	B
			US 2005200144	A	20050810		
			US 2006331140	A	20060113		

Priority Applications (no., kind, date): US 2005200144 A 20050810; US 2002188732 A 20020702; US 2006331140 A 20060113
Alerting Abstract US A1
NOVELTY - Providing percutaneous access to facilitate insertion of e.g. orthopedic **spinal** stabilization implant involves percutaneously inserting an elongated **tubular** structure having a small cross-sectional profile; removing a **tubular** restraint from the elongate **tubular** structure; and expanding the elongate **tubular** structure to a greater cross-sectional profile.

USE - For providing percutaneous access (claimed) to facilitate insertion of orthopedic spinal stabilization implant.
ADVANTAGE - The **minimally invasive procedure** inserts an orthopedic **fixation** or stabilization implant into the body, such as a formed in situ **spinal stabilization rod** by insertion through the portals of adjacent bone **anchors**. This provides a smooth channel to facilitate the passage of another deployment catheter carrying an inflatable orthopedic **fixation device** at its distal end.

26/5/6 (Item 6 from file: 350)
Derwent WPIX

0015129866 *Drawing available*
WPI Acc no: 2005-479399/200548
Related WPI Acc No: 2005-404612
XRPX Acc No: N2005-390244
Method for delivering spinal fixation component, involves manipulating Spinal fixation component to extend in second orientation angled with respect to first orientation to position spinal fixation component in relation to spinal anchor
Patent Assignee: DEPUY SPINE INC (DEPU-N)
Inventor: ANDERSON D G; ROSS G J; SELOVER S P; SHEEHY N M; SICVOL C W; ANDERSON D; ROSS G; SELOVER S; SHEEHY N; SICVOL C
Patent Family (4 patents, 107 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2005060534	A2	20050707	WO 2004US39919	A	20041129	200548	B
US 20050154389	A1	20050714	US 2003738130	A	20031216	200548	E
			US 2004711704	A	20040930		
EP 1694225	A2	20060830	EP 2004812446	A	20041129	200657	E
			WO 2004US39919	A	20041129		
AU 2004304934	A1	20050707	AU 2004304934	A	20041129	200680	E

Priority Applications (no., kind, date): US 2003738130 A 20031216; US 2004711704 A 20040930
Alerting Abstract WO A2
NOVELTY - **Spinal fixation component is advanced through a lumen (12c) in percutaneous access device (12) in first orientation parallel to longitudinal axis (L) of percutaneous access device**. The spinal fixation component is then manipulated to extend in second orientation angled with respect to first orientation to position the spinal fixation component in relation to a spinal **anchor** (50).
DESCRIPTION - The spinal **anchor** is percutaneously delivered to a vertebral body with the percutaneous **access device** mated with the spinal **anchor**. The percutaneous **access device** includes the **lumen** extending through the percutaneous **access device** and defining the longitudinal axis. INDEPENDENT CLAIMS are also included for the following:
a minimally invasive surgical method;
a percutaneous **access device** for introducing spinal fixation component to patient's body;
a dissection tool for separating muscles; and
a medical device kit.
USE - For delivering spinal fixation component in minimally invasive manner to spinal **anchor** site within patient's spine.
ADVANTAGE - Reduces amount of trauma caused to patient. Minimizes damage to muscle surrounding the surgical site.
DESCRIPTION OF DRAWINGS - The figure is the perspective view of the percutaneous **access device** coupled to spinal **anchor**.
12 Percutaneous **access device**
12c **Lumen**
50 Spinal **anchor**
52 Head

54 Threaded shank
L Longitudinal axis

26/5/7 (Item 7 from file: 350)
Derwent WPIX

0015056583 *Drawing available*
WPI Acc no: 2005-404612/200541
Related WPI Acc No: 2005-479399
XRPX Acc No: N2005-328328
Minimally invasive delivery of spinal fixation element involves manipulating access device to second position that is angled with respect to first orientation to position spinal fixation element into spinal anchor
Patent Assignee: ANDERSON D G (ANDE-I); ROSS G J (ROSS-I); SELOVER S P (SELO-I); SICVOL C W (SICV-I)
Inventor: ANDERSON D G; ROSS G J; SELOVER S P; SICVOL C W
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20050131421	A1	20050616	US 2003738130	A	20031216	200541	B

Priority Applications (no., kind, date): US 2003738130 A 20031216
Alerting Abstract US A1
NOVELTY - The method involves advancing a spinal **fixation element** through the **lumen** in a percutaneous **access device** (12) in first position that is parallel to the longitudinal axis of the **access device**. The **access device** can be manipulated to a second position that is angled with respect to first orientation to position the spinal **fixation element** into a spinal **anchor** (50).
DESCRIPTION - An INDEPENDENT CLAIM is included for a percutaneous **access device**.
USE - For delivering spinal **fixation element** to spinal **anchor** site in minimally invasive manner.
ADVANTAGE - Enables the **access device** to be positioned at several angles with respect to the patient's spinal column. Reduce amount of trauma caused to the patient and minimize damage to the muscle surrounding the surgical site.
DESCRIPTION OF DRAWINGS - The figure is the perspective view of the percutaneous **access device**.
12 Percutaneous **access device**
12a,12b Proximal and distal ends of **access device**
14 Opening
50 Spinal **anchor**

26/5/8 (Item 8 from file: 350)
Derwent WPIX

0006575665
WPI Acc no: 1993-387484/
XRPX Acc No: N1993-299213
Instrument to percutaneously, dorsally tension spinal column injuries - has flat steel spring, in guide tube , set perpendicular to spinal curve and allows looping of spinal processes
Patent Assignee: SCHNEIDER M (SCHN-I)
Inventor: SCHNEIDER M
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type

DE 4217660	A1	19931202	DE 4217660	A	19920529	199349	B

Priority Applications (no., kind, date): DE 4217660 A 19920529

Alerting Abstract DE A1

The instrument comprises a guide **tube**, central **rod**, positioning sleeve, guide wire, hooked **rod**, and a flat steel spring which is set perpendicular to the spinal curve and allows a looping angle of the spinal processes of 90 deg.. The looping of the spinal processes by the spring places it in the guide **tube**.

The spring, within the guide **tube**, is released by the central **rod**. The guide wire is attached to the tip of the and can direct the spring. The **hook rod**, in the centre of the guide **tube**, **anchors** the implant on the spring.

USE/ADVANTAGE - For orthopaedics and accident and neuro surgery. It is a fast and economical method and can be used on different regions of the column such as the cervical region and lumbar region.

28/5/2 (Item 2 from file: 350)

Derwent WPIX

0016339074 *Drawing available*

WPI Acc no: 2007-055243/200706

Related WPI Acc No: 2004-571266; 2005-232366; 2005-689803

XRAM Acc no: C2007-019495

XRPX Acc No: N2007-038601

System for providing access to spine of patient, has cannula with distal end with docking element securable to connecting element implantable in vertebra

Patent Assignee: BUTTERS J (BUTT-I); CHIN K R (CHIN-I); FALLIN T W (FALL-I); JUSTIN D F (JUST-I)

Inventor: BUTTERS J; CHIN K R; FALLIN T W; JUSTIN D F

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20060264962	A1	20061123	US 2003669927	A	20030924	200706	B
			US 2003518580	P	20031108		
			US 2004868075	A	20040615		
			US 2005202487	A	20050812		

Priority Applications (no., kind, date): US 2003669927 A 20030924; US 2003518580 P 20031108; US 2004868075 A 20040615; US 2005202487 A 20050812

Alerting Abstract US A1

NOVELTY - A **cannula** has discrete blades that are parallel to each other. The **cannula** has distal end insertable into patient to provide access to spine. The distal end has docking element discrete from and securable to connecting element implantable in vertebra (24) of spine (10).

USE - For providing access to spine of patient for inserting **rod** for posterior spinal fusion system.

ADVANTAGE - Provides access to spine and enables to implant a device in body in a **minimally invasive** manner.

DESCRIPTION OF DRAWINGS - The figure shows the perspective view of two adjacent vertebrae of **spine** with guide wire implanted in pedicle.

10 **spine**

24 vertebra

70,72 guide wire

74 proximal end of guide wire

76 distal end of guide wire

28/5/8 (Item 8 from file: 350)

Derwent WPIX

0013256965 *Drawing available*
WPI Acc no: 2003-342470/200332
Related WPI Acc No: 2002-537147; 2004-533947
XRAM Acc no: C2003-089843
XRPX Acc No: N2003-274000

Orthopedic fixation rod for stabilizing implant within body, comprises elongated tubular inflatable balloon with interior chamber and accelerator for accelerating curing of curable media into chamber

Patent Assignee: VERTELINK CORP (VERT-N)
Inventor: DABNEY J H; NGUYEN T V; PHAM T V; SHAOLIAN S M; TEITELBAUM G P; VAN NGUYEN T

Patent Family (6 patents, 100 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2003020110	A2	20030313	WO 2002US27516	A	20020828	200332	B
US 6749614	B2	20040615	US 2000213385	P	20000623	200439	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		
			US 2001976459	A	20011010		
EP 1437974	A2	20040721	EP 2002757460	A	20020828	200447	E
			WO 2002US27516	A	20020828		
AU 2002323477	A1	20030318	AU 2002323477	A	20020828	200452	E
JP 2005501585	W	20050120	WO 2002US27516	A	20020828	200508	E
			JP 2003524429	A	20020828		
US 6899713	B2	20050531	US 2000213385	P	20000623	200536	E
			US 2000747066	A	20001221		
			US 2001943636	A	20010829		

Priority Applications (no., kind, date): US 2000747066 A 20001221; US 2000213385 P 20000623; US 2001976459 A 20011010; US 2001943636 A 20010829; US 2002161554 A 20020531

Alerting Abstract WO A2
NOVELTY - An in situ formable orthopedic fixation **rod**, comprises an elongated **tubular** balloon (114) having an interior chamber and inflatable from a first insertion profile to second, enlarged profile and an accelerator for accelerating the curing of a curable media into the chamber.
DESCRIPTION - *INDEPENDENT CLAIMS are also included for the following:*
an orthopedic fixation device (102) which comprises an elongated flexible tubular body (TB) (104) having a distal end (108) and proximal end (106) body forming a central **lumen**, manifold (124) at the proximal end with an inflatable member (IM) having proximal and distal ends and an interior removably attached to distal end, heat source in thermal communication with interior of IM and valve provided at proximal end;
a method for stabilizing an orthopedic fracture which involves inserting two anchors with portals into a bone, delivering an orthopedic device with balloon to the bone, inflating balloon with stiffening material and heating the media above body temperature to accelerate stiffening of the stiffening material. The orthopedic device extends through portals, such that inflating fixes and anchors in relation to one another;
a method for forming an orthopedic device at a treatment site within the body of a patient which involves positioning an outer wall at the treatment site in which the outer wall forming a chamber, introducing a hardenable media into the chamber and heating the media to accelerate hardening to form orthopedic device;
a method for treating a patient which involves securing a first rod at first site in patient, securing a second rod at second site, introducing a curable media between first and second rods to form a cross link and heating the media at 50(deg)C to accelerate curing of the media thereby linking the first rod to the second rod; and
a deployment catheter for deploying an implantable inflatable orthopedic device which comprises an elongated flexible TB, inflatable device removably carried by distal end, energy source connected to proximal end and heating element in thermal communication with the inflatable device.

USE - For forming implantable and inflatable orthopedic fixation and for stabilizing implants within the body.
ADVANTAGE - The device enables the access treatment site within the body by using minimally invasive procedures.
DESCRIPTION OF DRAWINGS - The figure shows a side elevational view of delivery catheter with inflatable fixation device.
100 Delivery catheter
102 Orthopedic fixation device
104 Tubular body
106 Proximal end of tubular body
108 Distal end of tubular body
110 Inner sleeve
112 Outer sleeve
114 Balloon
120 Reinforcement element
122 Stiffening wire
124 Manifold

28/5/9 (Item 9 from file: 350)
Derwent WPIX

0007536906 *Drawing available*
WPI Acc no: 1996-150600/199615
Related WPI Acc No: 1993-008411; 1994-340531; 1996-496765; 1998-206434; 2000-255673; 2004-666345; 2005-151916
XRPX Acc No: N1996-126650
Method for subcutaneous suprafascial pedicular internal fixation of vertebra of spine - involves excising nucleus if affected disc and preparing graft before instrumenting vertebrae for fixation
Patent Assignee: DANEK MEDICAL INC (DANE-N)
Inventor: MATHEWS H H
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5496322	A	19960305	US 1992852577	A	19920317	199615	B
			US 1992938308	A	19920901		
			US 1993267	A	19930101		
			US 1994279222	A	19940722		

Priority Applications (no., kind, date): US 1992852577 A 19920317; US 1992938308 A 19920901; US 1993267 A 19930101; US 1994279222 A 19940722
Alerting Abstract US A
The method includes steps for excising nucleus of affected disc, preparing bone graft, instrumenting vertebrae for fixation, and introducing bone graft into resected nuclear space. Disc resection is conducted through two portals through annulus, with one portal supporting resection instruments and other supporting viewing **device**. **fixation** hardware is inserted through small incisions aligned with each pedicle to be instrumented
The hardware includes bone **screws**, fixation plates, engagement nuts, and linking members. In important aspect of method, fixation plates, engagement nuts and linking members are supported suprafascially but subcutaneously so that fascia and muscle tissue are not damaged. bone **screw** is configured to support fixation hardware above fascia. three component dilator system is provided for use during bone **screw** implantation steps of method
ADVANTAGE - Provides method for internal fixation of spinal column which is **minimally invasive** and which poses minimal health risk to patient, permits subcutaneous removal of

temporarily implanted hardware in out-patient procedure.

28/5/10 (Item 10 from file: 350)
Derwent WPIX

0006941523 *Drawing available*
WPI Acc no: 1994-340531/199442
Related WPI Acc No: 1993-008411; 1996-150600; 1996-496765; 1998-206434; 2000-255673; 2004-666345; 2005-151916
XRPX Acc No: N1994-267125
Method for subcutaneous suprafascial pedicular internal fixation - has disc resection conducted through two portals through annulus
Patent Assignee: DANEK MEDICAL INC (DANE-N)
Inventor: MATHEWS H H
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 5357983	A	19941025	US 1992852577	A	19920317	199442	B
			US 1992938708	A	19920901		
			US 1993391	A	19930104		

Priority Applications (no., kind, date): US 1992938708 A 19920901; US 1992852577 A 19920317; US 1993391 A 19930104
Alerting Abstract US A
The method for **percutaneously** resecting the nucleus of a **spinal** disc in a disk space, comprises introducing a pair of **cannulae** bilaterally into the disc space of the disc, perforating the disc annulus at the location of each **cannula**; and inserting a cutting instrument into one **cannula** and a viewing instrument into the other **cannula**.
It involves resecting the disc nucleus through the one **cannula** under direct vision through the other **cannula** ; and transposing the cutting instrument and viewing instrument between **cannulae** and resecting the remaining disc nucleus through the other **cannula**.
ADVANTAGE - Requires **minimally invasive** surgery.

[File 155] **MEDLINE(R)** 1950-2007/Jan 26

[File 5] **Biosis Previews(R)** 1969-2007/Feb W1

[File 73] **EMBASE** 1974-2007/Feb 13

[File 94] **JICST-EPlus** 1985-2007/Feb W3

[File 144] **Pascal** 1973-2007/Feb W1

[File 35] **Dissertation Abs Online** 1861-2007/Jan

[File 65] **Inside Conferences** 1993-2007/Feb 13

Set	Items	Description
S1	813392	S SPINE OR SPINAL
S2	720243	S ROD OR RODS OR (FIXATION OR FUSION)(1N)(PIECE? ? OR DEVICE? ? OR ELEMENT? ? OR MECHANISM? ?) OR FIXATOR? ?
S3	610158	S BULBOUS OR BULG??? OR PROTRUD? OR PROTRUSION? ? OR SPHERICAL OR SQUARE OR RECTANGULAR OR BULB? ? OR BULBLIKE
S4	17631	S (FEATURE? ? OR SHAPE???? OR FORM? ? OR CONFIGUR? OR ASPECT? ?)(5N)END? ?
S5	1174648	S CANNULA? ? OR LUMEN? ? OR ACCESS()(DEVICE? ? OR ELEMENT? ? OR MECHANISM? ?) OR TUBE OR TUBES OR TUBELIKE OR TUBULAR OR CYLIND?? OR CYLINDRICAL?? OR CONDUIT? ?
S6	742490	S SLOT OR OPENING OR SLIT OR APERTURE OR HOLE OR PORT OR GAP
S7	174288	S ANCHOR? ? OR ANCHORING OR HOOK? ? OR BOLT? ? OR SCREW? ?
S8	280157	S PERCUTANEOUS? OR MINIMALLY()INVASIVE
S9	5497	S S1(S)S2
S10	227	S S3(3N)S4
S11	8179	S S5(5N)S6
S12	0	S S1 AND S2 AND S10 AND S11
S13	251	S S1 AND (S2(S)S3:S4)
S14	**1**	**S S11 AND S13**
S15	83	S S1 AND S2 AND S5 AND S7
S16	2	S S15 AND S3
S17	10	S S15 AND S6
S18	12	S S16:S17 NOT S14
S19	11	RD (unique items)
S20	**11**	**SORT S19/ALL/PY,A**
S21	5101	S S8(S)S1
S22	11	S S15 AND S8
S23	11	S S22 NOT (S14 OR S16 OR S17)
S24	7	RD (unique items)
S25	**7**	**SORT S24/ALL/PY,A**
S26	60	S S2(S)S3:S4 AND S5(S)S6
S27	8	S S26 AND S7
S28	0	S S26 AND S8
S29	4	S S26 AND S1
S30	7	S (S27 OR S29) NOT (S14 OR S16:S17 OR S22)
S31	6	RD (unique items)
S32	**6**	**SORT S31/ALL/PY,A [not relevant]**
S33	187	S S2(S)S3(S)S7
S34	6	S S33 AND S5(S)S6
S35	40	S S2(S)S4(S)S7
S36	3	S S35 AND S5(S)S6
S37	0	S (S34 OR S36) NOT (S14 OR S16:S17 OR S22 OR S27 OR S29)

```
S38          8   S S21 AND S15
S39          0   S S38 NOT (S14 OR S16:S17 OR S22 OR S27 OR S29)
S40       1043   S S1/TI AND S8/TI
S41       2430   S S1/DE AND S8/DE
S42        364   S S40 AND S41
S43         21   S S42 AND S2
S44         37   S S42 AND S7
S45         15   S S43 AND S44
S46         13   S S45 NOT (S14 OR S16:S17 OR S22 OR S27 OR S29)
S47          6   RD  (unique items)
S48          6   SORT S47/ALL/PY,A
S49         30   S S42 AND S5
S50         51   S (S43 OR S44 OR S49) NOT (S14 OR S16:S17 OR S22 OR S27 OR S29 OR S45)
S51         42   RD  (unique items)
S52          5   S S51/2005
S53         12   S S51/2006
S54          0   S S51/2007
S55         25   S S51 NOT S52:S54
S56         25   SORT S55/ALL/PY,A
```

14/7/1 (Item 1 from file: 5)
Fulltext available through: SCIENCEDIRECT
Biosis Previews(R)

17527595 **Biosis No.:** 200300496314
Pedicle attachment assembly
Author: Cooper Derek Redvers (Reprint); Collins Simon Nicholas; Emslie Ian James; Fletcher David Mark
Author Address: Berkshire, UK**UK
Journal: Official Gazette of the United States Patent and Trademark Office Patents 1274 (5): Sep. 30, 2003 2003
Medium: e-file
ISSN: 0098-1133 _(ISSN print)
Document Type: Patent
Record Type: Abstract
Language: English
Abstract: A pedicle attachment assembly includes a pedicle attachment device having a head. A polyaxial housing has a through bore comprising a base portion and two posts upstanding from the base portion, the posts defining therebetween **a slot for receiving a rod**. A saddle-shaped element is disposable in the **slot** and has a part **cylindrical** recess in an upper surface for engagement in use with the **rod**. The saddle-shaped element has a convex lower portion for engagement in a complimentary concave recess in an upper surface of the head of the attachment device. The lower surface of the head of the attachment device and the lower end of the through bore in the housing have complementary part **spherical** surfaces for engagement with one another. A cap assembly is provided for clamping the **rod** in the housing.

20/7/4 (Item 4 from file: 5)
Fulltext available through: SCIENCEDIRECT
Biosis Previews(R)

15821012 **Biosis No.:** 200000539325
Side mounted polyaxial pedicle screw
Author: Errico Joseph P (Reprint); Errico Thomas J; Ralph James D
Author Address: Far Hills, NJ, USA**USA
Journal: Official Gazette of the United States Patent and Trademark Office Patents 1234

(3): May 16, 2000 2000
Medium: e-file
ISSN: 0098-1133
Document Type: Patent
Record Type: Abstract
Language: English
Abstract: A polyaxial orthopedic device for use with **rod** implant apparatus which includes a **screw** having a head, a **tubular** body having holes in the top, side and bottom therof, and a **rod** coupling element. The head of the **screw** is disposed in the body with the shaft of the **screw** extending out the bottom **hole**, such that the body and the **screw** may initially rotate relative to one another. **The rod coupling element has a ball shaped end** which seats in the body with the remainder of the **rod** coupling element extending out of the side **hole** of the body, such that the **rod** coupling element and the body are initially polyaxially coupled relative to one another. The ball end of the **rod** coupling element is disposed on top of the head of the **screw**. A set **screw** is provided in the top of the body, the tightening of which causes the ball, head, and body to be crush locked together, thereby preventing further relative motion.

20/7/6 (Item 6 from file: 5)
Fulltext available through: SCIENCEDIRECT
Biosis Previews(R)

17498693 **Biosis No.:** 200300457372
Spinal fusion implants and tools for insertion and revision
Author: Zdeblick Thomas (Reprint); McKay William F; Boyd Larry; Ray Eddie; McGahan Thomas
Author Address: Memphis, TN, USA**USA
Journal: Official Gazette of the United States Patent and Trademark Office Patents 1274 (1): Sep. 2, 2003 2003
Medium: e-file
ISSN: 0098-1133 _(ISSN print)
Document Type: Patent
Record Type: Abstract
Language: English
Abstract: An interbody **fusion device** in one embodiment includes a tapered body defining a hollow interior or chamber for receiving bone graft or bone substitute material. The body defines exterior threads which are interrupted over portions of the outer surface of the **device**. The **fusion device** includes truncated side walls so that on end view the body takes on a **cylindrical** form. In another embodiment, the tapered body is solid and formed of a porous biocompatible material having sufficient structural integrity to maintain the intradiscal space and normal curvature. The material is preferably a porous tantalum composite having fully interconnected pores to facilitate complete bone tissue ingrowth into the implant. In further embodiments, the **fusion devices** are provided with osteogenic material to facilitate bone ingrowth. A cap is also provided to block the **opening** of hollow **fusion devices**. The cap includes an occlusion body and an elongated **anchor**. In some embodiments the **anchor** includes a lip which is engageable to openings in the body wall.

20/7/7 (Item 7 from file: 5)
Fulltext available through: SCIENCEDIRECT
Biosis Previews(R)

17759879 **Biosis No.:** 200400130636
Six-axis and seven-axis adjustable connector
Author: Taylor Harold Sparr (Reprint)
Journal: Official Gazette of the United States Patent and Trademark Office Patents 1279

(1): Feb. 3, 2004 2004
Medium: e-file
ISSN: 0098-1133 _(ISSN print)
Document Type: Patent
Record Type: Abstract
Language: English
Abstract: A connection assembly between a **spinal** implant **rod** and a vertebral **anchor**. The connection assembly includes a spindle and a housing. **The spindle has an aperture for receiving a spinal implant rod in a spinal implant system**. And structure for urging the **rod** within the **aperture**, such as a setscrew, is provided through a suitable threaded **opening** in the spindle so as to be extendable into the **aperture**. The housing has an **aperture** for receiving a shaft or shank of a vertebral **anchor** of a **spinal** implant system. The housing also has an **aperture** for receiving a generally **cylindrical** projection portion of the spindle. Structure for urging the shank of the vertebral **anchor** against the projection portion, such as a setscrew, is provided through a suitable threaded **opening** in the housing.

25/7/2 (Item 2 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

14150445 **PMID:** 12535377
Minimally invasive lateral mass screws in the treatment of cervical facet dislocations: technical note.
Wang Michael Y; Prusmack Chad J; Green Barth A; Gruen J Peter; Levi Allan D O
Department of Neurological Surgery, Keck School of Medicine, University of Southern California, Los Angeles, California, USA. myw@usc.edu
Neurosurgery (United States) Feb 2003 , 52 (2) p444-7; discussion 447-8 , **ISSN:** 0148-396X--Print **Journal Code:** 7802914
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
OBJECTIVE: The technique of lateral mass **screw** and **rod** or plate fixation is a major advancement in the posterior instrumentation of the cervical **spine**. This technique provides rigid three-dimensional fixation, restores the dorsal tension band, and provides highly effective stabilization in patients with many types of traumatic injuries. METHODS: Patient 1 was a 32-year-old man who had been in a motor vehicle accident. He presented with right C5 radiculopathy. X-ray findings included 45% anterolisthesis of C4 on C5, bilateral facet disruption, and right unilateral C4-C5 facet fracture and dislocation. The patient was placed in Gardner-Wells tongs, and the fracture was reduced with 25 pounds of traction. Patient 2 was a 56-year-old woman who had been in a motor vehicle accident that resulted in complete quadriplegia. Her initial imaging studies revealed a C3-C4 right unilateral facet fracture with subluxation. She was placed in traction, and her neurological status was reassessed. The findings of her neurological examination revealed improvement: she was found to have Brown-Sequard syndrome. Patient 3 was a 33-year-old man who was involved in a diving accident that resulted in bilaterally jumped facets at C3-C4. The patient was neurologically intact, and attempts at closed reduction were not successful. RESULTS: Patients 1 and 2 underwent anterior cervical discectomy with iliac crest autograft fusion and plating. They were then placed in the prone position, and a dilator **tubular** retractor system was used to access the facet joint at the level of interest. The facet joints were then denuded and packed with autograft. Lateral mass **screws** were then placed by means of the Magerl technique, and a **rod** was used to connect the top-loading **screws**. Patient 3 underwent posterior surgery that included only removal of the superior facet, intraoperative reduction, and bilateral lateral mass

screw and **rod** placement. CONCLUSION: This technical note describes the successful placement of lateral mass **screw** and **rod** constructs with the use of a **minimally invasive** approach by means of a **tubular** dilator retractor system. This approach preserves the integrity of the muscles and ligaments that maintain the posterior tension band of the cervical **spine**.
Record Date Created: 20030121
Record Date Completed: 20030324

25/7/3 (Item 3 from file: 94)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
JICST-EPlus

06017933 **JICST Accession Number:** 05A0206396 **File Segment:** JICST-E
Posterior oblique lumbar arthrodesis for spondylolisthesis using X- TUBE
YAGI SHOJI (1); MIHASHI MASARU (1); MIYAMOTO MASAFUMI (1); NISHIOKA TAKASHI (1); TAMURA TATSUYA (1)
(1) Japanese Red Cross Soc., Takamatsu Red Cross Hospital, JPN
Chubu Nippon Seikei Geka Saigai Geka Gakkai Zasshi (Central Japan Journal of Orthopaedic Surgery & Traumatology) , 2004 , VOL.47,NO.4 , PAGE.831-832 , FIG.4, REF.2
Journal Number: Z0420BAS **ISSN:** 0008-9443
Universal Decimal Classification: 616.7-089
Language: Japanese **Country of Publication:** Japan
Document Type: Journal
Article Type: Short Communication
Media Type: Printed Publication
Abstract: We developed posterior oblique lumbar arthrodesis (POLAr method) which used pedicle **screw** (PS) jointly by applying X-**tube**. As an advantage of POLAr method, **minimally invasive** surgery by unilateral approach is mentioned. Contralateral soft tissue is preserved, so that it is less invasive than PLIF. In the meantime, it is mentioned that the operation area is narrow as a problem. For initial 3 cases, PS fixation was also carried out using X-**TUBE** in the opposite side. Recent 3 cases underwent unilateral PS fixation and posterolateral fusion by unilateral approach.

48/7/1 (Item 1 from file: 5)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
Biosis Previews(R)

16834263 **Biosis No.:** 200200427774
Percutaneous pedicle screw fixation of the lumbar spine: Preliminary clinical results
Author: Foley Kevin T (Reprint); Gupta Sanjay K
Author Address: Image-Guided Surgery Research Center, 220 South Claybrook, Suite 700, Memphis, TN, 38104, USA**USA
Journal: Journal of Neurosurgery 97 (1 Supplement): p 7-12 July, 2002 2002
Medium: print
ISSN: 0022-3085
Document Type: Article
Record Type: Abstract
Language: English
Abstract: Object. Standard techniques for pedicle **screw** fixation of the lumbar spine involve open exposures and extensive muscle dissection. The purpose of this study was to report the initial clinical experience with a novel device for percutaneous posterior fixation of the lumbar spine. Methods. An existing multiaxial lumbar pedicle **screw** system was modified to allow **screws** to be placed percutaneously by using an extension sleeve that permits remote manipulation of the polyaxial **screw** heads and remote engagement of the **screw**-locking mechanism. A **unique rod-insertion device** was developed that linked to

the **screw** extension sleeves, allowing for a precut and -contoured **rod** to be placed through a small stab wound. Because the insertion device relies on the geometrical constraint of the
rod pathway through the **screw** heads, minimal manipulation is required to place the **rods** in a standard submuscular position, there is essentially no muscle dissection, and the need for direct visual feedback is avoided. Twelve patients (six men and six women) who ranged in age from 23 to 68 years underwent pedicle **screw** fixation in which the **rod** - insertion device was used. Spondylolisthesis was present in 10 patients and osseous nonunion of a prior interbody fusion was present in two. All patients underwent successful percutaneous fixation. Ten patients underwent single-level fusions (six at L5-S1, three at L4-5, and one at L2-3), and two underwent two-level fusions (one from L3-5 and the other from L4-S1). The follow-up period ranged from 10 to 19 months (mean 13.8 months). Conclusions. Although percutaneous lumbar pedicle **screw** placement has been described previously, longitudinal connector (**rod** or plate) insertion has been more problematic. The device used in this study allows for straightforward placement of lumbar pedicle **screws** and **rods** through percutaneous stab wounds. Paraspinous tissue trauma is minimized without compromising the quality of spinal fixation. Preliminary experience involving the use of this device has been promising.

48/7/2 (Item 2 from file: 144)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
Pascal

15912805 PASCAL No.: 03-0052174
Minimally invasive percutaneous posterior lumbar interbody fusion
Minimally Invasive Surgery of the **Spine**
KHOO Larry T; PALMER Sylvain; LAIC Daniel T; FESSLER Richard G
FESSLER Richard G, ed
Department of Neurosurgery, University of Southern California, Los Angeles, California, United States; Mission Viejo, California, United States; Institute for Spine Care, Chicago, United States; Institute of Neurosurgery and Neuroresearch, Rush Presbyterian Medical Center, Chicago, Illinois, United States
Institute for Spine Care, Chicago Institute of Neurosurgery and Neuroresearch, Rush Presbyterian Medical Center, Chicago, Illinois, United States
Journal: Neurosurgery, 2002
51 (5 SUP) S2.166-S2.181
ISSN: 0148-396X CODEN: NRSRDY Availability: INIST-18396
354000105168300210
No. of Refs.: 70 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English
OBJECTIVE: The wide exposure required for a standard posterior lumbar interbody fusion (PLIF) can cause unnecessary trauma to the lumbar musculoligamentous complex. By combining existing microendoscopic, percutaneous instrumentation and interbody technologies, a novel, minimally invasive, percutaneous PLIF technique was deveioped to minimize such latrogenic tissue injury (MIP-PLIF). METHODS: The MIP-PLIF technique was validated in three cadaveric torsos with six motion segments decompressed and fused. Preoperative variables measured from imaging included interpedicular distance, pedicular height and width, interspinous distance, lordosis, intervertebral height, Cobb angie, and formainal heig and volume Using the METRx and MD **spinal access systems** (Medtronic Sotamor Danek,

Medphis, distance, lordosis, intervertebral height, Cobb angie, and foraminal height and volume. Using the METRx and MD **spinal access systems** (Medtronic Sofamor Danek, Memphis, TN), bilateral laminotomies were performed using a hybrid of microsurgical and microendoscopic techniques. the intervertebral disc spaces were then destracted and prepared with the Tangent (Medtronic Sofamor Danek) interhody instrumens. Either a 10 or 12 by 22 mm interbody graft was then placed. Usin tje Sextand (Medtronic Sofamor Danek) system, percutaneous pedicle **screw-rod** fixation of the motion segment was completed. We then applied MIP-PLIF in three patients. RESULTS: For segments with preoperative intervertebraffora minal height loss, MIP-PLIF was effective in restoring oth heights in all cases. The amount of improvement (9.7 to 385 disc height increase; 7.7 to 29.9% formainal height ncrease) varied directly with the size of the graft used and the original degree of disc and foraminal height loss. Segmental lordosis improved by 29% on average. Graft and **screw** placement was accurate in the cadavers, except for a signle Grade 1 **screw** vioation of one pedicle. The average operative time was 3.5 hours per level. In our three clinical cases, the MIP-PLIF procedure required a mean of 5.4 hours, estimated blood loss was i185 ml, and inpatient stay was 2.8 days, with no intravenous narocotic use after 2 days in any of the patients. All **screw** and graft placements were confirmed. CONCLUSION: A complete PLIF procedure can be safely and effectively performed using minimally invasive techniques, thereby potentially reducing the pain and morbidity associated with standard open surgery. Prospective, randomized outcome studies will be required to validate the efficacy of this excitin new surgical technique.

48/7/3 (Item 3 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

13927113 **PMID:** 12234426
Minimally invasive spine instrumentation.
Kim Daniel H; Jaikumar Sivakumar; Kam Andrew C
Department of Neurosurgery, Stanford Medical Center, Stanford, California 94305, USA. neurokim@stanford.edu
Neurosurgery (United States) Nov 2002 , 51 (5 Suppl) pS15-25 , **ISSN:** 0148-396X--Print **Journal Code:** 7802914
Publishing Model Print
Document type: Journal Article; Review
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
OBJECTIVE: We discuss the instrumentation used with minimally invasive spine surgery. METHODS: Minimally invasive surgery has revolutionized all areas of surgery. The use of endoscopes permits surgical maneuvers to be performed through small incisions. RESULTS: Video-assisted thoracoscopic surgery can be used for a variety of spinal indications. The nerve roots and the spinal cord can be decompressed, bone grafts can be placed for interbody fusion and vertebral body reconstruction, and internal **fixation devices** can be applied to stabilize the spine. Thoracoscopy can be used to perform thoracic sympathectomies, to resect thoracic disk herniations, to biopsy thoracic vertebral body lesions, to release complex spinal curvatures for the reduction of scoliosis, to perform vertebrectomies, to resect tumors, to debride infections, and to treat spinal fractures. Laparoscopic techniques have been applied to the lumbar spine. Laparoscopic procedures have been used for anterior and posterior approaches to the lumbar spine. Anterior

arthrodesis has been performed by laparoscopic insertion of the Bagby and Kuslich cages into the L4-5 and the L5-S1 intervertebral disc spaces. Laparoscopic retroperitoneal techniques have been used for anterior plating to fixate the anterior column rigidly to restore stability. In addition, the posterolateral approach has been used for pedicle **screw** fixation of the lumbar spine using endoscopic techniques. CONCLUSION: Minimally invasive techniques have been used successfully for treating spinal disorders. With the use of endoscopic techniques, a spine surgeon can perform complex spinal instrumentation through small portals, thus reducing morbidity for the patient. (53 Refs.)
Record Date Created: 20020917
Record Date Completed: 20021204

48/7/4 (Item 4 from file: 5)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
Biosis Previews(R)

17877827 **Biosis No.:** 200400246774
New percutaneously inserted spinal fixation system.
Author: Teitelbaum George P (Reprint); Shaolian Samuel; Mcdougall Cameron G; Preul Mark C; Crawford Neil R; Sonntag Volker K H
Author Address: USC University Hospital, 1500 San Pablo Street, 2nd Floor, Los Angeles, CA, 90033, USA**USA
Author E-mail Address: gteitelbaum@onebox.com
Journal: Spine 29 (6): p 703-709 March 15, 2004 2004
Medium: print
ISSN: 0362-2436 _(ISSN print)
Document Type: Article
Record Type: Abstract
Language: English
Abstract: Study Design: We describe a new percutaneous minimally invasive spinal fixation system based on pedicle **screws** and inflatable **rods**. The **rods** are inserted in a flexible state and harden following deployment. We test this system in terms of biocompatibility, ferromagnetism, magnetic resonance artifact production, bench top mechanical testing, ease of insertion within cadavers, potential thermal damage to paraspinous muscles in pigs, and long-term device tolerability in sheep. Objectives: To determine the safety and utility of this system before its use in human subjects. Summary of Background Data: Composite materials and epoxy compounds have been used safely in a variety of implanted medical devices for years with no signs of systemic toxicity or significant device failures. Methods: Long-term biocompatibility test of system components was conducted according to International Standards Organization 10993 and Food and Drug Administration Blue Book Memorandum G95-1 standards. Device components were assessed for magnetic deflection and torque and imaged in a 1.5 Tesla magnetic resonance unit. Full constructs of the system were tested for compression strength, torque, and fatigue per American Society for Testing and Materials F1717 standards. The system was deployed using C-arm fluoroscopic guidance in 11 cadavers and 2 live sheep. Further, the inflatable **rods** were tested for exothermic damage to paraspinous musculature in 2 pigs. Results: All system components were found to be biocompatible, nonferromagnetic, and produce little magnetic resonance artifact. Compression and torque results for the new system were found to be comparable to standard metallic pedicle
screw and **rod** fixation systems. However, the new system displayed a superior modulus of elasticity relative to standard surgical systems. The new system endured 5 million cycles of repetitive compressions without breakage or significant wear. All cadaver and sheep insertions were performed successfully. Sheep suffered no complications, and minimal blood loss occurred during device insertions. One of the animals killed at 6 months demonstrated no internal organ damage. The self-curing version of polymer used to inflate the flexible **rods** cured to approximately 53% of its final strength in 90 minutes with maximum external **rod** temperature of 40.5 C. and no adjacent thermal damage within porcine

paraspinous musculature. Conclusions: The new spinal fixation system is biocompatible, uses a nontoxic polymer, is magnetic resonance compatible, displays favorable biomechanical characteristics, can be easily deployed percutaneously using simple fluoroscopic guidance, is well tolerated in living sheep, caused no muscular thermal damage, and could be used in humans within a reasonable operative time frame. The new system demonstrates the feasibility of percutaneously constructing composite structures in situ within the body.

56/7/3 (Item 3 from file: 73)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
EMBASE

05757395 **EMBASE No:** 1994169212
Treatment of osteomyelitis of the spine using percutaneous suction/irrigation and percutaneous external spinal fixation
Jeanneret B.; Magerl F.
Klinik fur Orthopadische Chirurgie, Kantonsspital,CH-9007 St. Gallen Switzerland
Journal of Spinal Disorders (J. SPINAL DISORD.) (United States) 1994 , 7/3 (185-205)
CODEN: JSDIE **ISSN:** 0895-0385
Document Type: Journal ; Article
Language: ENGLISH **Summary Language:** ENGLISH
External skeletal fixation is a well-known tool in the management of infection of long bones. However, the application of external skeletal fixation in the treatment of spinal infection has not been previously reported. We have used percutaneous external spinal fixation (PESF) for the treatment of osteomyelitis of the spine in 23 patients since 1981. The treatment consists of percutaneous vertebral biopsy for bacteriologic diagnosis, installation of a suction/irrigation system into the intervertebral disk space, and posterior stabilization (and reduction if indicated) with an **external fixator placed percutaneously**. This treatment was conceived in 15 patients as definitive treatment. One patient died due to pulmonary embolism. In 12 patients, the infection healed without further operative treatment. Preoperative kyphosis averaged 15degree (range 0-30degree). At follow-up, kyphotic deformity also averaged 15degree (range 0-30degree). Two patients required anterior debridement and bone grafting because of progression of bony destruction. In eight patients, PESF was performed emergently, followed by planned anterior debridement and interbody grafting. The treatment was successful in all patients. All fusions healed. Preoperative kyphosis averaged 18degree (range 0-40degree). At follow-up, kyphotic deformity averaged 10degree (range 0-22degree). Our present indications are listed below and comprise pyogenic and tuberculous osteomyelitis of the spine localized between T3 and S1. The procedure is an alternative to conservative or more invasive operative treatment modalities in the following conditions: (a) painful lesions of the spine with minimal bone loss, not amenable to efficient orthotic stabilization (thoracic spine from T3 to T9, lumbosacral junction, elderly patients, or presence of deleterious general conditions); (b) osteomyelitis of the spine from T3 to S1, when emergency decompression of the spine is mandatory because of neurologic deterioration due to the kyphotic deformity or to a noncapsulated epidural abscess and anterior decompression is not possible emergently; (c) pyogenic osteomyelitis of the spine at L5/S1, when operative treatment is indicated. In addition, percutaneous insertion of external skeletal fixation is indicated in the presence of infected wounds, making internal posterior stabilization unsuitable (e.g., after open decompression of epidural abscess, postoperative infections).

56/7/5 (Item 5 from file: 144)
Fulltext available through: custom link USPTO Full Text Retrieval Options SCIENCEDIRECT

Pascal

12996297 PASCAL No.: 97-0276281
Lumbar percutaneous endoscopic interbody fusion : Evaluation of Evolving Technology for Spinal Surgery for the Year 2000
LEU H F; HAUSER R K; SCHREIBER A
PRISMA Spine Unit, Neumuenster Hospital, Zollikerberg/Zurich, Switzerland
Journal: Clinical orthopaedics and related research
, 1997 (337)
58-63
ISSN: 0009-921X CODEN: CORTBR Availability: INIST-15462
; 354000065164480070
No. of Refs.: 27 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English
Since 1982, percutaneous endoscopic control has been found to be a fundamental help for selective posterior subligamentary decompression in lumbar contained disc herniations. After the first clinical experience in 1986 with percutaneous intervertebral bone grafting, the need for sufficient percutaneous preparation of the adjacent vertebral plates and postoperative immobilization of the operated on segment became evident. So in 1988, the original eccentrically abrasive end plate cutter for application under discoscopy was introduced. For a preoperative trial and postoperative stabilization, the complementary use of the external pedicle **fixation device** was standardized in 1988. The use of percutaneous autologous bone interposition was found essential for optimal bony interbody consolidation. The indications were limited strictly to monosegmental lumbar dysfunctions without a need for peridural decompression. In a series of 37 patients with standardized procedure and a mean followup of 33 months, bony interbody consolidation was achieved in 30 cases. The technique desists from any need for blood transfusion, and functional rehabilitation is facilitated because of the very limited percutaneous approach.

56/7/6 (Item 6 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

11584422 **PMID:** 9518197
[Minimally invasive ventral spondylodesis in injuries to the thoracic and lumbar spine]
Minimal-invasive ventrale Spondylodesen bei Verletzungen der Brust- und Lendenwirbelsaule.
Buhren V; Beisse R; Potulski M
Berufsgenossenschaftliche Unfallklinik Murnau.
Der Chirurg; Zeitschrift fur alle Gebiete der operativen Medizen (GERMANY) Nov 1997 , 68 (11) p1076-84 , **ISSN:** 0009-4722--Print **Journal Code:** 16140410R
Publishing Model Print
Document type: Journal Article ; English Abstract
Languages: GERMAN
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Thirty-eight patients with 40 fractures of the thoracic spine and the thoracolumbar junction were treated by a minimally invasive procedure, which includes partial corporectomy, the interposition of a tricortical bone graft and anterior stabilization by

plate spondylodesis under thoracoscopic control. For 36 patients the operation was successfully performed in a complete thoracoscopic way; in 2 patients conversion to an open technique was necessary. Two postoperative complications such as a reversible lesion of the thoracodorsalis nerve and a transient irritation of nerve root L1 on the approach side were encountered. Postoperative control by X-ray and CT scan showed correct positioning of the bone graft, as well as the **fixation device** in all patients. Our experience with this minimally invasive stabilizing procedure for injuries of the thoracic spine and the thoracolumbar junction demonstrated the feasibility of the method. Compared to the open method the benefit of minimally invasive surgery included postoperative pain reduction, shorter hospitalization, early recovery of function and reduced morbidity of the operative approach.
Record Date Created: 19980324
Record Date Completed: 19980324

56/7/9 (Item 9 from file: 73)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
EMBASE

10627274 **EMBASE No:** 2000093153
Instruments and devices for minimally-invasive spine surgery
Wing C.A.; Lutze T.
C.A. Wing, Research and Development Department, Aesculap AG and Co KG, Am Aesculap-Platz, D-78532 Tuttlingen Germany
Minimally Invasive Therapy and Allied Technologies (MINIMALLY INVASIVE THER. ALLIED TECHNOL.) (United Kingdom) 1999 , 8/5 (297-302)
CODEN: MITAF **ISSN:** 1364-5706
Document Type: Journal ; Review
Language: ENGLISH **Summary Language:** ENGLISH
Number Of References: 22
Surgeons and engineers share the aim of reducing the trauma associated with the approach to the spine. We describe a selection of instruments and devices developed for minimally-invasive spinal surgery and highlight some of the difficulties and opportunities experienced during the development process. The degree to which the spinal operation can be made minimally invasive is limited by technical, as well as medical restraints. The surgeon cannot be expected to operate down a narrow **tube** through which the surgical instruments cannot be adequately seen or manoeuvred. The designer of the instruments and devices must consider these constraints, as well as the limits characterised by the mechanical properties of the materials being used. Additionally, new technologies or tools could be employed which change the designer's way of thinking, thus enabling a new design process to be started. The narrow **tube** could therefore be guided using an imaging technique, an endoscope, or computer-assisted navigation. These factors must all be considered, so as to avoid developing instrumentation which is either not truly minimally invasive or, on the other hand minimally effective.

56/7/10 (Item 10 from file: 5)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
Biosis Previews(R)

15190454 **Biosis No.:** 199900450114
Anatomic evaluation of two different techniques for the percutaneous insertion of pedicle screws in the lumbar spine
Author: Wiesner Lothar (Reprint); Kothe Ralph; Ruether Wolfgang
Author Address: Department of Orthopaedics, University Hospital Eppendorf, Martinistr. 52, 20246, Hamburg, Germany**Germany
Journal: Spine 24 (15): p 1599-1603 Aug. 1, 1999 1999

Medium: print
ISSN: 0362-2436
Document Type: Article
Record Type: Abstract
Language: English
Abstract: Study Design. An in vitro study in which a human cadaver model was used to examine the accuracy of two different techniques of percutaneous pedicle **screw** insertion in the lumbar spine. Objectives. To investigate the in vitro misplacement rate of pedicle **screw** insertion for two different percutaneous techniques: 1) the well established Magerl technique, and 2) a new modified technique. Summary of Background Data. Numerous anatomic and biomechanical studies have been conducted to analyze the in vitro and in vivo characteristics of pedicle **screw** insertion in the lumbar spine via an open approach, whereas there is a lack of experimental data concerning the more sophisticated percutaneous procedure. Methods. Thirty human specimens from L1 to S1 were separated into two groups (A and B). In group A, the **screws** were placed in accordance with the technique described by Magerl; in group B, a new modified technique developed by the authors' research group was used. After **screw** placement, the specimens were dissected, and pedicle violations were noted with respect to the degree and direction of the **screw** misplacement. Results. The dissection of the specimens showed that of 360 pedicle **screws**, 37 were misplaced. This finding translates into an overall misplacement rate of 10%. With the Magerl technique, 23 pedicle violations (misplacement rate, 13%) were found; with the modified technique, only 14 dislocated pedicle **screws** (misplacement rate, 8%) were detected. This difference was not statistically significant (P = 0.118). In both groups, there were significantly more medial pedicle violations than lateral (32 medial and 5 lateral **screw** dislocations). The degree of the **screw** misplacements varied between 1.0 and 5.0 mm. The majority of pedicle violations (30 of 37) were minor, i.e., less than 3.0 mm. Conclusions. This in vitro study showed that the percutaneous technique of pedicle **screw** insertion in the lumbar spine is a safe and reliable procedure. Compared with the well-established Magerl technique, the new modified technique did not decrease the misplacement rate significantly, although less pedicle violations were found in the upper lumbar spine.

56/7/12 (Item 12 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT ProQuest
MEDLINE(R)

12286287 **PMID:** 9915535
An open, minimally invasive approach to the lumbar spine.
Dewald C J; Millikan K W; Hammerberg K W; Doolas A; Dewald R L
Department of General Surgery, Rush Medical College, Rush Presbyterian St. Luke's Medical Center, Chicago, Illinois, USA.
American surgeon (UNITED STATES) Jan 1999 , 65 (1) p61-8 , **ISSN:** 0003-1348--Print
Journal Code: 0370522
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
A minimum 2-year follow-up retrospective review was undertaken to assess our experience with an anterior paramedian muscle-sparing approach to the lumbar spine for anterior spinal fusion (ASF). The records of 28 patients (November 1991 through January 1996) undergoing ASF via a left lower quadrant transverse skin incision (6-10 cm) with a paramedian anterior rectus fascial Z-plasty retroperitoneal approach were reviewed. Diagnosis, number, and level of lumbar interspaces fused, types of fusion, estimated blood loss, length of procedure, length of hospital stay, and complications were

analyzed. All cases were completed as either a same-day anterior/posterior (24 of 28) or as a staged procedure at least 1 week after posterior fusion (4 of 28). The General Surgery service performed the muscle-sparing approach, whereas the Orthopedic Spine service performed the ASF. There were 14 men and 14 women, with a mean age of 35.5 years (range, 11-52 years). Diagnoses included spondylolisthesis in 20 cases (including four grade III or IV slips), segmental instability (degenerative or postsurgical) in 7, and 1 flatback deformity. A single level was fused in 20 cases (L4/5 in 4 and L5/S1 in 16), two levels were fused in 5 cases (L4/5 and L5/S1) and three levels were fused in 2 cases (L3/4, L4/5, and L5/S1). The mean length of stay was 7.4 days (range, 5-12 days). The mean estimated blood loss was 300 mL for the anterior procedure alone and 700 ml for both anterior/posterior procedures on the same day. The mean length of operating room time for the anterior approach and fusion was 117 minutes (range, 60-330 minutes). Posterior instrumentation was used in all cases. Anterior interbody struts used included 19 autogenous tricortical grafts, 4 fresh-frozen allografts (2 femoral rings and 2 iliac crests), 3 carbon fiber cages packed with autogenous bone, and a Harms titanium cage with autograft. There was one L5 corpectomy for which a large tricortical allograft strut was utilized. There were no vascular, visceral, or urinary tract injuries. In three cases a mild ileus developed, which resolved spontaneously. We conclude that the anterior paramedian muscle-sparing retroperitoneal approach is safe, uses a small skin incision, avoids cutting abdominal wall musculature, and allows for multiple-level anterior spinal fusions by a variety of interbody fusion techniques. This approach does not require transperitoneal violation or added endoscopic instrumentation, nor does it limit fusion level and technique of fusion, as is the case with the recently popularized laparoscopic approach to the lumbar spine.
Record Date Created: 19990126
Record Date Completed: 19990126

56/7/14 (Item 14 from file: 144)
Fulltext available through: custom link USPTO Full Text Retrieval Options SCIENCEDIRECT
Pascal

14805843 PASCAL No.: 00-0486813
The evolution of percutaneous spinal endoscopy and discectomy : State of the art
Minimally invasive techniques in neurosurgery
YEUNG Anthony T
SAVITZ Martin H, ed
Squaw Peak Surgical Facility, Phoenix, AZ, United States
Good Samaritan Hospital, Suffern, NY, United States
Journal: The Mount Sinai journal of medicine, 2000, 67 (4) 327-332
ISSN: 0027-2507 CODEN: MSJMAZ Availability: INIST-6682; 354000091410460110
No. of Refs.: 19 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English
Objective: The author relates his 7 years' experience with endoscopic spine surgery for lumbar disc herniations and conditions previously treated only with more invasive methods. Materials and Methods: Five hundred (500) patients were treated with the Yeung endoscopic spine system, which features an endoscope with a 2.8 mm operating channel. The protocol included preoperative or intraoperative discography in all cases. Adjuvant therapies were employed in various clinical conditions when dictated by the

visualized spinal pathology - KTP laser (Laser-scope, San Jose, CA) in 100 patients, radiofrequency by electrothermal probe in 400 patients, chymopapain in 50 cases, and intraoperative steroids in 100 cases. A newer **slotted tube system** allowed for foraminoplasty and removal of osteophytes or extruded fragments. Results: Good-to-excellent results were recorded in 432 of the 500 patients (86.4%). Separate analysis was made of the first 100 cases when the KTP laser was in use. Conclusions: The 2.8 mm operating channel scope produced clear visualization of annular tears, disc fragments, foraminal osteophytes, and the epidural space. Monitoring of the microinstruments in the disc space and spinal canal was readily accomplished. The quality of the imaging provided by discography improved the definition of the disc pathology. Adjuvant use of lasers, radiofrequency, chymopapain, and intradiscal steroids and the newer slotted **tube** system, have contributed to the advances in minimally invasive technique for endoscopic discectomy.

56/7/16 (Item 16 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

12677997 **PMID:** 10766069
Posterior percutaneous spine instrumentation.
Lowery G L; Kulkarni S S
Research Institute International Inc., Gainesville, FL 32608, USA. gllmdphd@usa.net
European spine journal - official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society (GERMANY) Feb 2000 , 9 Suppl 1 pS126-30 , **ISSN:** 0940-6719--Print **Journal Code:** 9301980
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Eighty consecutive cases of suprafascial pedicle **screw** stabilization were reviewed. Intraoperative fluoroscopy aided the percutaneous **screw** placement after structural anterior interbody graft(s) were placed. During routine outpatient hardware removal, all intradiscal fusions were stressed via the Shanz **screws** under fluoroscopy. Anterior reconstruction via a mini open approach coupled with this minimally invasive posterior approach led to a 96% successful fusion rate.
Record Date Created: 20000502
Record Date Completed: 20000502

56/7/17 (Item 17 from file: 73)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
EMBASE

11128512 **EMBASE No:** 2001146888
Minimally invasive approach to the cervical spine: A proposal
Miccoli P.; Berti P.; Raffaelli M.; Materazzi G.; Conte M.; Faldini A.
Prof. P. Miccoli, Dipartimento di Chirurgia, Via Roma 67, 56100 Pisa Italy
Author Email: p.miccoli@dc.med.unipi.it
Journal of Laparoendoscopic and Advanced Surgical Techniques - Part A (J. LAPAROENDOSC. ADV. SURG. TECHN. PART A) (United States) 2001 , 11/2 (89-92)
CODEN: JLSTF **ISSN:** 1092-6429

Document Type: Journal ; Article
Language: ENGLISH **Summary Language:** ENGLISH
Number Of References: 11
Background and Purpose: During the last 3 years, a minimally invasive video-assisted approach for parathyroidectomy and thyroidectomy has been developed. Because of the good exposure of the cervical spine during these procedures, the authors decided to perform an anatomic-radiologic study in order to evaluate which cervical vertebrae could be reached by this minimally invasive approach. Patients and Methods: Three consenting patients, two undergoing minimally invasive parathyroidectomy and one a conventional operation for CSUB4-CSUB5 disc herniation, were selected for this study. The procedure was carried out through a single 1.5-cm central skin incision above the sternal notch. After opening of the cervical linea alba, dissection was performed under endoscopic vision, without using any COSUB2 insufflation or trocar. After exposure of the prevertebral fascia, an operative **tube** was introduced through the cervical incision in order to maintain the operative space without using conventional retractors. Results: Through this operative **tube**, it was possible to introduce both a 5-mm (or 3-mm) endoscope and the surgical instruments. In our patients, we inserted a 1-mm metal probe to exactly localize during fluoroscopy the vertebrae reached by the dissection (CSUB2-CSUB7). Conclusions: This study shows the feasibility of an anterior minimally invasive approach to the cervical spine. Although the exact indications have to be verified, a video-assisted approach could add some advantages to the well-known benefits coming from the anterior approaches to the cervical spine, especially in terms of cosmetic results and postoperative course and recovery.

56/7/18 (Item 18 from file: 155)

13963874 **PMID:** 12376893
[Endoscopically assisted minimally invasive reconstruction of the anterior thoracolumbar spine in prone position]
Endoskopisch assistierte Rekonstruktion der thorakolumbalen Wirbelsaule in Bauchlage.
Verheyden A P; Katscher S; Gonschorek O; Lill H; Josten C
Klinik fur Unfall- und Wiederherstellungschirurgie, Universitat Leipzig, Germany.
verhey@medizin.uni-leipzig.de
Der Unfallchirurg (Germany) Oct 2002 , 105 (10) p873-80 , **ISSN:** 0177-5537--Print
Journal Code: 8502736
Publishing Model Print
Document type: Journal Article ; English Abstract
Languages: GERMAN
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Irrespective of an anterior open or endoscopic approach, the combined postero-anterior instrumentation of thoracolumbar fractures requires time consuming intraoperative maneuvers changing the patients position from prone to lateral. A standardised anterior endoscopically assisted approach for the segments Th4 to L4 is described, allowing the patient to remain in prone position, using a 4-5cm incision combined with a retractor system. The approach to the anterior spine in prone position is feasible by using a self holding retractor system for the region from Th4 to L4. Time of anaesthesia for the one stage combined procedure can be reduced by about 40 min, when changing the position of the patient is no longer necessary. The minimal incision in combination with the retractor system allows mainly the use of conventional instruments and implants, which provides reasonable lower costs. The advantages of the open and the endoscopical technique are combined. The main advantage of the prone position is the opportunity to access the anterior and posterior spine simultaneously, which is extremely helpful in reduction maneuvers.

Record Date Created: 20021011
Record Date Completed: 20030303

56/7/19 (Item 19 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

13927112 **PMID:** 12234425
History of minimally invasive spine surgery.
Jaikumar Sivakumar; Kim Daniel H; Kam Andrew C
Department of Neurosurgery, Stanford Medical Center, Stanford, California 94305, USA.
Neurosurgery (United States) Nov 2002 , 51 (5 Suppl) pS1-14 , **ISSN:** 0148-396X--Print **Journal Code:** 7802914
Publishing Model Print
Document type: Historical Article; Journal Article; Review
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Patients prefer minimally invasive techniques because such techniques reduce recovery times and provide cosmetic benefits. Reviewing the history of minimally invasive surgery helps us understand the advances in spine surgery. Minimally invasive spine surgery has adopted techniques from several fields to better treat spinal disorders. Minimally invasive spine surgery has been influenced by advances in lasers, endoscopy, and image guidance systems. Discogenic disorders have been treated by using chemonucleolysis, automated percutaneous discectomy, and intradiscal thermoablation. Endoscopic techniques have been used to treat spinal disorders. Thoracoscopes and laparoscopes have been used to perform anterior release of scoliotic or kyphotic deformities and to perform transthoracic microsurgical discectomies. The role of spinal thoracoscopy has expanded to include corpectomy, vertebral reconstruction with internal fixation, hardware application, and resection of neurogenic, spinal, and paraspinal tumors. Advances in interbody fusion cage technology have generated a great deal of interest in laparoscopic techniques. Image-guided systems are widely used in intracranial surgery and have been adapted to facilitate **screw** placement since the middle 1990s. The use of image-guided systems for pedicle **screw** placement has improved placement accuracy. The system relies on precise localization of the pedicles with computed tomography. Minimally invasive surgery is designed for "conventional" operations involving extensive anatomic dissections performed via small incisions; it yields shorter recovery times and less morbidity. (135 Refs.)
Record Date Created: 20020917
Record Date Completed: 20021204

56/7/21 (Item 21 from file: 5)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
Biosis Previews(R)

17808596 **Biosis No.:** 200400179353
Re: Foley KT, Holly LT, Schwender JD. Minimally invasive lumbar fusion. Spine 2003;28:S26-35.
Author: Kambin Parviz (Reprint)
Author Address: Department of Orthopaedic Surgery, Drexel University College of Medicine, Philadelphia, PA, USA**USA
Journal: Spine 29 (5): p 598-599 March 1, 2004 2004
Medium: print
ISSN: 0362-2436 _(ISSN print)
Document Type: Letter

Record Type: Citation
Language: English

56/7/22 (Item 22 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

15238223 **PMID:** 15654676
[Minimally invasive posterior corpectomy of the lumbar spine with transpedicular fixation]
Minimalnie inwazyjna korpektomia tylna odcinka ledzwiowego kregoslupa ze stabilizacja przeznasadowa
Maciejczak Andrzej; Barnas Piotr; Dudziak Piotr; Jagiello-Bajer Barbara; Litwora Bogdan
Oddzial Neurochirurgii, Szpital Wojewodzki, Tarnow. amac@mp.pl
Neurologia i neurochirurgia polska (Poland) Nov-Dec 2004 , 38 (6) p511-6; discussion 517 , **ISSN:** 0028-3843--Print **Journal Code:** 0101265
Publishing Model Print
Document type: Case Reports; Evaluation Studies; Journal Article ; English Abstract
Languages: POLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
The authors present their experience in the minimally invasive posterior keyhole lumbar corpectomy with transpedicular stabilization. This technique involves the removal of the posterior part of the affected vertebral body with the pedicle **screw** fixation through four 2-3 cm long skin incisions on the back. Two cephalad skin incisions provide an approach for corpectomy and instrumentation of the upper pedicles of the construct. Two caudal skin incisions provide an approach for instrumentation of the lower pedicles of the construct. The minimum armamentarium requirement includes classic micro lumbar discectomy retractor set and intraoperative fluoroscopy. According to the authors' best knowledge this is the first minimally invasive posterior keyhole lumbar corpectomy ever reported in the literature (2002). This is also the first minimally invasive transpedicular fixation ever performed in Poland (2002). This technique was presented during EANS Congress (Lisbon, September 2003). Some reports have recently appeared in the literature on percutaneous pedicle **screw** fixation of the lumbar spine in non traumatic cases. A special instrumentarium system (Sextant by Medtronic) has been developed and used in this type of minimally invasive stabilization. Although this system has not been dedicated for spine fractures it is feasible in trauma cases. We have one case of L2 burst fracture fixed percutaneously with Sextant.
Record Date Created: 20050117
Record Date Completed: 20050419

56/7/23 (Item 23 from file: 155)
Fulltext available through: ScienceDirect (Elsevier) USPTO Full Text Retrieval Options SCIENCEDIRECT
MEDLINE(R)

15212055 **PMID:** 15597482
Minimally invasive removal or revision of lumbar spinal fixation.
Salerni Anthony A
Orthopedic Professional Association, Gilford, NH 03249, USA. asalerni@orthopa.com
spine journal - official journal of the North American Spine Society (United States) Nov-Dec 2004 , 4 (6) p701-5 , **ISSN:** 1529-9430--Print **Journal Code:** 101130732
Publishing Model Print
Document type: Case Reports; Journal Article
Languages: ENGLISH

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BACKGROUND CONTEXT: There are both absolute and relative indications for the removal of pedicle **screw** fixation in the lumbar spine. Whatever the reasons are, removal of this hardware has required a surgical dissection that has been generally as extensive as the one used for their initial placement. These dissections are always disabling in the short term. In fact, the magnitude of this disabling pain can be significant enough so as to effectively eliminate **screw** removal as a logical treatment option for many conditions where indications for removal are only relative. Percutaneous pedicle **screw** fixation has served to amplify the stakes associated with this dilemma. In fact, this new technique makes the need for a less invasive method of pedicle **screw** removal greater now than ever. PURPOSE: This paper describes a minimal access surgical technique for pedicle **screw** construct removal that employs the **tubular** retractor system that was originally developed for microendoscopic discectomy. STUDY DESIGN: This case study represents a summary of the surgical experience gained from the first 10 patients to have undergone removal or revision of pedicle **screw** constructs by this minimally invasive method. METHODS: A retrospective analysis of pre- and postoperative clinical data was gathered from the hospital records. Surgical times and blood loss were also extracted from these records. The procedure is described in detail. Interpretation of the surgical parameters and clinical effects are discussed. RESULTS: Six patients presented with a radiculopathy secondary to a misdirected pedicle **screw**. Two of these patients were admitted for simple removal. The four remaining patients who had undergone percutaneous pedicle **screw** fixation developed acute radicular pain from a misdirected **screw**. These patients underwent revision of their constructs by this method. **Screws** were also removed unilaterally in four other patients as the initial phase to revision or additional surgery. All procedures were performed through 16 mm **tubular** retractors. Operative time averaged 33 minutes for the group ,and it ranged between 22 and 40 minutes. Hospital length of stay averaged I day for the group. Hospital stay averaged only 0.8 hospital days for the patients in whom **screw** removal was the primary goal. At 1 month after surgery no patient felt limited by incisional pain. No complications occurred. CONCLUSIONS: Unlike most other minimal access surgical procedures, the learning curve for this procedure appears to be relatively flat. Removal of pedicle **screw** fixation in the manner described proved to be simple and straightforward. The benefits are dramatic and immediate. It is possible to complete the procedure within minutes, and the pain produced is best described as inconsequential. This minimally invasive technique radically alters both the intraoperative and postoperative courses for those who face pedicle **screw** removal. The disadvantages associated with the standard open approach are reduced to the production of mild short-term discomfort and an exposure to the potential risks of brief anesthesia and the possibility of a surgical infection. Considering that hospital stay should be limited to I day or less and that surgical times are less than I hour, minimally invasive removal or revision of hardware should reduce overall costs significantly.
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Minimally invasive spinal surgery: a historical perspective.
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The concept of minimally invasive spinal surgery embodies the goal of achieving clinical outcomes comparable to those of conventional open surgery, while minimizing the risk of iatrogenic injury that may be incurred during the exposure process. The development of microscopy, laser technology, endoscopy, and video and image guidance systems provided the foundation on which minimally invasive spinal surgery is based. Minimally invasive treatments have been undertaken in all areas of the spinal axis since the 20th century. Lumbar disc disease has been treated using chemonucleolysis, percutaneous discectomy, laser discectomy, intradiscal thermoablation, and minimally invasive microdiscectomy techniques. The initial use of thoracoscopy for thoracic discs and tumor biopsies has expanded to include deformity correction, sympathectomy, vertebrectomy with reconstruction and instrumentation, and resection of paraspinal neurogenic tumors. Laparoscopic techniques, such as those used for appendectomy or cholecystectomy by general surgeons, have evolved into procedures performed by spinal surgeons for anterior lumbar discectomy and fusion. Image-guided systems have been adapted to facilitate pedicle **screw** placement with increased accuracy. Over the past decade, minimally invasive treatment of cervical spinal disorders has become feasible by applying technologies similar to those developed for the thoracic and lumbar spine. Endoscope-assisted transoral surgery, cervical laminectomy, discectomy, and foraminotomy all represent the continual evolution of minimally invasive spinal surgery. Further improvement in optics and imaging resources, development of biological agents, and introduction of instrumentation systems designed for minimally invasive procedures will inevitably lead to further applications in minimally invasive spine surgery.
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